



## Taxonomy & Inventories

# An annotated checklist of grasshoppers (Orthoptera, Acridoidea) from Mongolia

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## Abstract

## Background

Grasshoppers (Acridoidea, Orthoptera) are the dominant herbivores in grassland ecosystems worldwide. They can increase rangeland productivity by stimulating plant growth and accelerating nutrient cycling. This article presents a comprehensive checklist of grasshoppers in Mongolia. Until then, the available information was very scattered, based on old studies of Mongolian grasshoppers, recorded in a few international catalogues and databases, individual records and research work on agroecosystem communities. However, the available information on the composition of the Orthopteran fauna in Mongolia was sometimes unclear or non-existent and these dubious data were excluded from the present study. In addition, the grasshopper distribution analysis used the standardised personal collection of D. Altanchimeg. We also present a list of grasshoppers, as well as their distribution and abundance, in countries adjacent to Mongolia, such as



Russia, China and South Korea. The surveys covered six types of natural zones: high mountain, taiga, forest-steppe, steppe, desert steppe and desert; desert steppe and steppe zones are the most widely distributed. We hope to have contributed significantly to the study of the distribution of grasshopper species in all these natural zones.

## New information

In this study, a total of three families of Acridoidea belonging to eight subfamilies, 17 tribes, 52 genera and 128 species are reported for the various natural zones. The recorded species belong to eight subfamilies: Gomphocerinae are the most numerous with 56 species recorded, followed by Oedipodinae (51 species), Thrinchinae (nine species), Melanoplinae (six species), Calliptaminae (three species), Dericorythinae, Acridinae, Egnatiinae (one species each).

## Keywords

distribution, fauna, natural zone, Pamphagidae, Acrididae, Dericorythidae, Mongolia

## Introduction

Locust and grasshoppers (Orthoptera, Acridoidea) are essential herbivores in grassland ecosystems worldwide (Latchininsky et al. 2011, Fang et al. 2015). They aid in plant growth and nutrient cycling and play an important part in food chains (Kietzka et al. 2021). However, locust and grasshopper outbreaks are considered a global problem. They can destroy grasslands and crops and inflict severe economic impacts on crops and rangelands (Hewitt 1977, Gupta 1983, Lockwood and Lockwood 2008, Latchininsky et al. 2011, Zhang et al. 2019, Lecoq and Zhang 2019, Lecoq and Cease 2022). A few grasshopper species have been proposed as ecological indicators of ecosystem health as they are susceptible to changes in land use and climate (Marini et al. 2008, Fartmann et al. 2012, Bazelet and Samways 2012, Uchida and Ushimaru 2014). Climate change and geographical characteristics are critical factors that determine grasshopper population growth. The grasshoppers (Acridoidea) are the largest superfamily of the orthopterans with 28 families, 140 subfamilies, 265 tribes, 2,459 genera (57 subgenera) and 10,531 valid species (1,951 subspecies) distributed throughout the world, except Antarctica (Cigliano et al. 2022). Mongolia is a landlocked country with diverse terrain, surrounded by mountains to the north and west and the forest-steppe of the Gobi Desert to the south. The majority of its land is covered by grassland steppe. Mongolia has six main natural zones and belts (that are divided into sub-divisions): alpine (high mountain) and mountain taiga, mixed and deciduous forests, steppe, desert steppe (Gobi) and desert zones (Yembuu 2021). Mongolia has a high elevation and cold and dry climate (Worden and Savada 1991, Gombobaatar et al. 2014).



Of these species, Mongolia contains 128 species in 52 genera and three families (Pamphagidae, Dericorythidae and Acrididae). In the early 1960s, several foreign and Mongolian researchers started undertaking expeditions for the Mongolian insect species checklist. Some of these expeditions were undertaken collaboratively with other countries, such as Poland (1962–1964), Hungary (1963–1968), Germany (1962–1964), the Czech Republic (1965–1966) and Russia (1967–1987). This research facilitated the study of insect distribution (physical and geographical distribution) in the different provinces of Mongolia and collected several grasshopper specimens. Referring to Rentsendorj and Khodroi (2020), the study on the list of grasshoppers in Mongolia was undertaken from 1951 to 2019 and a list of 110 species was established. Of them, three different families and 48 genera between 1951 and 1989 (Mistshenko and Bey-Bienko 1951, Mistshenko 1968, Günther 1971, Chogsomzhav 1971, Chogsomzhav 1974b, Chogsomzhav 1977, Chogsomzhav 1989, Gorochoy et al. 1989) and 81 species of two families and 33 genera between 1990–2019 (Batkhuuag 1995, Batnaran et al. 1999, Batnaran 2008, Ganbold 2009, Altanchimeg et al. 2014, Altanchimeg and Nonnaizab 2013, Batkhuyag et al. 2014, Gandulam 2016, Otgonchimeg 2017) were added to the list. Moreover, 69 short-horned grasshopper species, which belonged to two families and 31 genera, were identified between 2013 and 2019 in Mongolia (Rentsendorj and Khodroi 2020). Recently, the species list of Mongolian grasshoppers was updated to three families, 49 genera and 127 species (Batkhuuag and Batnaran 2021). However, as this species list included uncertain specimen records and unclear sources, the accuracy of these sources needed to be checked.

The present study is the first comprehensive study to update the diversity of Mongolian grasshoppers (Acridoidea), including information on species traits and distribution by natural zones. To create this annotated checklist, we reviewed all published materials related to short-horned grasshopper species that were newly discovered in Mongolia since the 1930s, followed by a taxonomic analysis using important source information from the Orthoptera Species File (Cigliano et al. 2022). The current study's findings will give fundamental information regarding the grasshopper diversity of Mongolia. Furthermore, it can inspire local scientists interested in topics such as ecology, biology, medicine, agriculture and education.

## Materials and methods

The list presented in the present paper is based on literature records of grasshopper species in Mongolia available up to May 2022. The taxa that were reported from Mongolia are listed taxonomically by subfamily and alphabetically within each subfamily, tribe and genus. Each species was examined in Mongolia and the citation of the first or most reliable reference to support this record is provided. First, the references to recorded species in Mongolia reported in the Orthoptera Species File online version 5.0/5.0 (Cigliano et al. 2022), Institute of Biology, Mongolian Academy of Sciences (MAS) (Chogsomzhav 1975, Altanchimeg et al. 2014), Plant Protection Research Institute of Mongolia (Batkhuuag et al. 2014) and the grasshopper list in Mongolia from the *Mongolian Journal of Agricultural*



*Sciences* were checked and, if erroneous, corrected in the current lists. Changes in systematic status and synonymies have been proposed by (Chogsomzhav (1989), Altanchimeg (2011) and Batkhuyag and Batnaran (2021).

The current work is an annotated study of grasshoppers (Acridoidea) in Mongolia, with an emphasis on a rare and unknown grasshopper species. Except for long-horned grasshoppers and crickets, this research systematises Acridoidea. Likewise, the list is used in taxonomic sequences by superfamily, family, subfamily, tribe, genus and species. Depending on the natural zone where the grasshopper was collected, they belong to that area. Grasshopper distribution in six different natural zones, distribution of grasshopper species in neighbouring countries on the northern border with Russia and south with China and comparison with the South Korean population were performed using the Biodiversity Pro 2.0 programme. In addition, in all cases, the similarity matrix of the Bray-Curtis cluster analysis dendrogram was used (single link). The grasshopper distribution in the six different natural zones was determined using ArcGIS ArcMap 10.7.1. The grasshopper's geographical distribution was drawn, based on the Mongolian steppe figure (Mohamed, A and Kimura 2014). The species registered on the European Red List were also divided into categories using IUCN Red List Categories and Criteria (IUCN 2022).

## **Institutional Abbreviations**

**(B.-Ulg.)** = Bayn-Ulgii

**(Zav.)** = Zavkhan

**(Khuvs.)** = Khuvsgul

**(A.-khang)** = Arkhangai

**(Bulg.)** = Bulgan

**(Orkh.)** = Orkhon

**(Sel.)** = Selenge

**(Da.)** = Darkhan-Uul

**(Khent.)** = Khentii

**(S.-baat.)** = Sukhbaatar

**(Do)** = Dornod

**(G.-alt.)** = Gobi-Altai

**(B.-khong.)** = Baynkhongor

**(U-khang)** = Uvurkhangai

**(Du.-govi)** = Dundgovi

**(U.-govi)** = Umnugovi

**(Do.-govi)** = Dornogovi.

(\*) = Endemic species of Mongolia

(+) = Geographical distribution of the natural zones

(★) = Indicator species of the geographical natural zones

(-) = poor species

## Checklist of Mongolian grasshopper

### *Acrida kozlovi* (Mistshenko, 1951)

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1111388>

**Native status: Distribution in the natural zone:** Desert steppe and desert.

**Distribution: in Mongolia:** U.-govi., Uvs. Mistshenko (1968):489, Chogsomzhav (1989):90, Myagmar et al. (2019):56, Batkhuyag and Batnaran (2021):48.

**Global distribution:** China, Inner Mongolia, Ningxia, Mongolia, Russia (Mistshenko and Bey-Bienko 1951, Chogsomzhav 1989).

### *Arcyptera (Arcyptera) albogeniculata* Ikonnikov, 1911

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1105385>

**Native status: Distribution in the natural zone:** Forest steppe.

**Distribution: in Mongolia:** Tuv., S.-baat., Do., Khovd. Ikonnikov (1911):250, Cejchan and Maran (1966):179, Steinmann (1967):108, Mistshenko (1968):490, Chogsomzhav (1970):127, Günther (1971):114, Altanchimeg and Nonnaizab (2013), Batkhuyag and Batnaran (2021):64.

**Global distribution:** China, South Korea, Mongolia (Ikonnikov 1911, Storozhenko and Paik 2007).



### ***Arcyptera (Pararcyptera) meridionalis* Ikonnikov, 1911**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1105423>

#### **Nomenclature:**

*Arcyptera flavicosta sibirica* Uvarov (1914):170.

**Native status: Distribution in the natural zone:** Forest steppe, steppe and desert steppe.

**Distribution: in Mongolia:** Uvs, Khuvs., Bulg., Tuv, Khent., S.-baat, B.-khong, U-khang., Du.-govi., U.-govi., Sel., Khent., A.-khang., Do. Uvarov (1914):170, Pylnov (1916):278, Chogsomzhav and Shurovenkov (1963):61-63, Cejchan and Maran (1966):180, Mistshenko (1968):490, Chogsomzhav (1968):56, Chogsomzhav (1970):127, Chogsomzhav (1974b):27, Chogsomzhav (1989):91, Storozhenko and Paik (2007):168, Sergeev et al. (2019):21, Batkhuyag and Batnaran (2021):65.

**Global distribution:** South Korea (Storozhenko et al. 2015), Tuva, S Siberia (from Tuva to Dauria and Yakutia), the southern part of the Russian Far East, Mongolia, NE China, N Korea (Sergeev et al. 2019).

### ***Arcyptera (Pararcyptera) microptera* (Fischer von Waldheim, 1833)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1105407>

**Native status: Distribution in the natural zone:** Forest steppe, steppe and desert steppe.

**Distribution: in Mongolia:** Khovd. Chogsomzhav (1972):160, Sergeev (1995):245, Sergeev et al. (2009):108, Altanchimeg (2011):16, Altanchimeg and Nonnaizab (2013), Batnaran et al. (2016):32, Sergeev et al. (2019):21, Batkhuyag and Batnaran (2021):64.

**Global distribution:** S Europe, W Siberia, S Krasnoyarsk Region, Caucasus, Kazakhstan, NW Mongolia, NW China (Sergeev et al. 2019).

### ***Arcyptera (Arcyptera) fusca* (Pallas, 1773)**

- Species-ID <http://orthoptera.speciesfile.org/common/basic/Taxa.aspx?TaxonNameID=47973>

#### **Nomenclature:**

*Gryllus cothurnatus* Creutzer (1799):129.

*Gryllus (Locusta) nympha* Stoll (1813):23.

*Arcyoptera stollii* Fieber (1853):99.

*Gryllus (Locusta) variegatus* Sulzer (1776):84.

*Gryllus versicolor* Gmelin (1789):2082.

**Native status: Distribution in the natural zone:** Forest steppe.

**Distribution: in Mongolia:** Zav., Khuvs., A.-khang., Sel., Tuv., Khovd, U-khang, Du.-govi., B.-khong. Pylnov (1916):278, Cejchan and Maran (1966):179, Steinmann (1967):109, Mistshenko (1968):490, Chogsomzhav (1968):57, Chogsomzhav (1970):127, Chogsomzhav (1989):91, Batkhuyag (1995):29, Childebaev and Storozhenko (2001), Sergeev et al. (2009):108, Altanchimeg and Nonnaizab (2013), Altanchimeg et al. (2013b):65, Sergeev et al. (2019):20, Popova et al. (2020):599, Batkhuyag and Batnaran (2021):64.

**Global distribution:** Tuva, southern part of European Russia, S Siberia up to Sakha (Yakutia), Amur Region, mountains of S Europe, Moldova, Ukraine, Caucasus, Kazakhstan, Mongolia, NE China (Sergeev et al. 2019).

### ***Andrea gorochovi* Mistshenko, 1989**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1104197>

**Native status: Distribution in the natural zone:** Desert steppe.

**Distribution: in Mongolia:** B.-Khong Gorochov et al. (1989):99,102, Batkhuyag and Batnaran (2021):103.

### ***Chrysochraon dispar* (Germar, 1834)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1106359>

**Native status: Distribution in the natural zone:** High mountain, taiga, forest-steppe, steppe, desert steppe, and desert.

**Distribution: in Mongolia:** Sel. Chogsomzhav (1972):157, Chogsomzhav (1989):93, Altanchimeg and Nonnaizab (2013), Altanchimeg et al. (2013b):65, Batkhuyag and Batnaran (2021):57.

**Global distribution:** Tuva, N Eurasia (except the extreme North), Caucasus, a mountain of Middle Asia, Mongolia (Sergeev et al. 2019).

### ***Euthystira brachyptera* (Ocskay, 1826)**

- Species-ID <http://orthoptera.speciesfile.org/common/basic/Taxa.aspx?TaxonNameID=1106449>



**Native status: Distribution in the natural zone:** High mountain, taiga, forest-steppe, steppe, desert steppe and desert.

**Distribution: in Mongolia:** Sel. Chogsomzhav (1969a):77, Chogsomzhav (1972):157, Chogsomzhav (1989):93, Altanchimeg and Nonnaizab (2013), Altanchimeg et al. (2013b):65, Batkhuyag and Batnaran (2021):57.

**Global distribution** Tuva, N Eurasia (the southern part of the forest zone, the forest-steppe and steppe zones), Mongolia (Sergeev et al. 2019).

### ***Mongolotettix mistshenkoi* Chogsomzhav, 1974**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1107086>

**Native status: Distribution in the natural zone:** Steppe and desert steppe.

**Distribution: in Mongolia.** Do.-govi. Chogsomzhav (1974a), Chogsomzhav (1975):42, Altanchimeg (2011):16, Batkhuyag and Batnaran (2021):58.

### ***Mongolotettix japonicus* (Bolívar, 1898)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1107087>

**Native status: Distribution in the natural zone:** Taiga, forest-steppe, steppe and desert steppe.

**Distribution: in Mongolia:** Uvs, Khuvs., A.-khang., Bulg., Sel., Tuv., Khent., S.-baat., Do., U-khang., U.-govi. Chogsomzhav (1989):93, Batkhuyag and Batnaran (2021):58.

**Global distribution:** South Korea, Mongolia (Storozhenko and Paik 2007), Japan (Bolívar 1898), Inner Mongolia (Zheng et al. 2012).

### ***Mongolotettix vittatus* (Uvarov, 1914)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1107089>

**Nomenclature:**

*Chrysochraon kaszabi* Steinmann (1967) :106-120.

**Native status: Distribution in the natural zone:** Taiga, forest-steppe, steppe and desert steppe.

**Distribution: in Mongolia:** Uvs, Khuvs., A.-khang., Bulg., Sel., Tuv, Khent., S.-baat., Do., U-khang., U.-govi. Pylnov (1916):276, Steinmann (1967):108, Steinmann (1968):



240, Steinmann (1971):148, Chogsomzhav (1989):93, Sergeev et al. (2019):17, Batkhuyag and Batnaran (2021):58.

**Global distribution:** Tuva, S Siberia from Tuva and Krasnoyarsk Region to Dauria, S Amur Region, Mongolia, NE China (Sergeev et al. 2019).

### ***Podismopsis altaica* (Zubovski, 1900)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1106371>

**Native status: Distribution in the natural zone:** High mountain, forest-steppe, steppe and desert steppe.

**Distribution: in Mongolia:** Khent. Zubovski (1900):2, Ikonnikov (1911):246, Bey-Bienko (1933):115, Günther (1971):114, Chogsomzhav (1969b):127, Chogsomzhav (1972):158, Chogsomzhav (1989):93, Altanchimeg and Nonnaizab (2013) , Sergeev et al. (2019):18, Batkhuyag and Batnaran (2021):59.

**Global distribution:** Tuva, Altai-Sayan Mts, E Kazakhstan, N Mongolia (Sergeev et al. 2019).

### ***Podismopsis ussurensis* Ikonnikov, 1911**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1106404>

**Native status: Distribution in the natural zone:** Forest steppe.

**Distribution: in Mongolia:** Khent. Chogsomzhav (1972), Storozhenko and Paik (2007) :187, Storozhenko et al. (2015):269, Batkhuyag and Batnaran (2021):60.

**Global distribution:** Korea (HN, PN), Russia (far east), NE China, Mongolia (Storozhenko et al. 2015).

### ***Eremippus mistshenkoi* Stebaev, 1965**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1105621>

**Native status: Distribution in the natural zone:** Steppe.

**Distribution: in Mongolia:** Uvs. Chogsomzhav (1969a):77, Chogsomzhav (1969b):127, Chogsomzhav (1972):1:61, Chogsomzhav (1989):92, Sergeev et al. (2019):22, Batkhuyag and Batnaran (2021):67.

**Global distribution:** Tuva, E Kazakhstan, NW Mongolia (Sergeev et al. 2019).

### ***Eremippus mongolicus* Ramme, 1952**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1105622>

#### **Nomenclature:**

*Eremippus kozlov* Mistshenko and Bey-Bienko (1951):452.

**Native status: Distribution in the natural zone:** Steppe, desert steppe and desert.

**Distribution: in Mongolia:** G.-alt., B.-khong., U.-khang., U.-govi. Mistshenko and Bey-Bienko (1951):452, Mistshenko (1968):490, Chogsomzhav (1968):59, Chogsomzhav (1989):92, Sergeev et al. (2019):22, Batkhuyag and Batnaran (2021):67.

**Global distribution:** Tuva, SE Kazakhstan, W Mongolia, NW China (Mistshenko and Bey-Bienko 1951), SE European Russia, Kazakhstan (except the northern part) (Sergeev et al. 2019).

### ***Eremippus simplex* (Eversmann, 1859)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1105654>

**Native status: Distribution in the natural zone:** Steppe, desert steppe and desert.

**Distribution: in Mongolia:** Uvs, Khovd, G.-alt. Günther (1971):115, Chogsomzhav (1974b):27, Chogsomzhav (1989):92, Sergeev (1995): 246, Sergeev et al. (2009):108, Popova et al. (2020):600, Batkhuyag and Batnaran (2021):68.

**Global distribution:** Kazakhstan, Turkmenistan, Uzbekistan, Afghanistan, Kirgizstan, Mongolia (Childebaev and Storozhenko 2001).

### ***Notostaurus albicornis* (Eversmann, 1848)**

- Species-ID <http://orthoptera.speciesfile.org/common/basic/Taxa.aspx/common/editTaxon/Distribution/Taxa.aspx?TaxonNameID=1105674>

**Native status: Distribution in the natural zone:** Steppe, desert steppe and desert.

**Distribution: in Mongolia:** Khovd. Günther (1971):114, Chogsomzhav (1989):92, Childebaev and Storozhenko (2001), Sergeev et al. (2009):108, Popova et al. (2020): 599, Batkhuyag and Batnaran (2021):66.

**Global distribution:** E Europe, Caucasus range, Mongolia, W Siberia, N Iran (Garai 2010).



***Dociostaurus (Kazakia) brevicollis* (Eversmann, 1848)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1105587>

**Native status: Distribution in the natural zone:** Forest steppe, steppe, desert steppe and desert.

**Distribution: in Mongolia:** Tuv, Khovd. Chogsomzhav (1969b):127, Chogsomzhav (1972):161, Chogsomzhav (1974b):28, Günther (1971):114, Sergeev (1995):245, Childebaev and Storozhenko (2001):30, Sergeev et al. (2009):108, Altanchimeg and Nonnaizab (2013), Altanchimeg et al. (2013b):65, Batkhuyag and Batnaran (2021):66.

**Global distribution:** Caucasus, Transcaucasia, East Europe, Russia East and South, Kazakhstan, Kirgizstan, Mongolia, Siberia, Iran (Childebaev and Storozhenko 2001).

***Dociostaurus (Kazakia) tarbinskyi* (Bey-Bienko, 1933)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1105586>

**Native status: Distribution in the natural zone:** Desert.

**Distribution: in Mongolia:** Khovd. Chogsomzhav (1969a):77, Chogsomzhav (1989):92, Childebaev and Storozhenko (2001):30, Batkhuyag and Batnaran (2021):66.

**Global distribution:** Kazakhstan and Mongolia (Childebaev and Storozhenko 2001).

***Eclipophleps bogdanovi* Tarbinsky, 1927**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1105104>

**Native status: Distribution in the natural zone:** High mountain, steppe and desert steppe.

**Distribution: in Mongolia:** Altai. Tarbinsky (1927):495, Günther (1971):123, Chogsomzhav (1972):175, Batkhuyag (1995):27, Chogsomzhav (1989):91, Sergeev et al. (2009):108, Altanchimeg (2011):16, Altanchimeg and Nonnaizab (2013), Batnaran et al. (2016):35, Batkhuyag and Batnaran (2021):61.

***Eclipophleps carinata* Mistshenko, 1968**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1105105>

**Native status: Distribution in the natural zone:** High mountain, desert steppe and desert.

**Distribution: in Mongolia:** B.-khong., G.-alt. Mistshenko (1968):493, Steinmann (1968):245, Sergeev (1995):243, Qian et al. (2021):1310, Batkhuyag and Batnaran (2021):63.

### ***Eclipophleps confinis* Mistshenko, 1951**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1105116>

#### **Nomenclature:**

*Oreoptigonotus mongolicus* Steinmann (1968):245.

**Native status: Distribution in the natural zone:** High mountain, steppe and desert steppe.

**Distribution: in Mongolia:** Khovd, G.-alt., B.-khong, U.-govi., U.-khang. Günther (1971):123, Mistshenko (1968):495, Chogsomzhav (1972):175, Chogsomzhav (1989):91, Sergeev (1995):243, Sergeev et al. (2009):108, Altanchimeg (2011):16, Batnaran et al. (2016):35, Batkhuyag and Batnaran (2021):63.

### ***Eclipophleps glacialis* Bey-Bienko, 1933**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1105106>

**Native status: Distribution in the natural zone:** High mountain, steppe and desert steppe.

**Distribution: in Mongolia:** B.-Ulg., Uvs. Bey-Bienko (1933):115, Chogsomzhav (1969b):128, Chogsomzhav (1989):91, Batkhuyag (1995):27, Sergeev et al. (2009):108, Altanchimeg (2011):16, Sergeev et al. (2019):19, Batkhuyag and Batnaran (2021):62.

### ***Eclipophleps kerzhneri* Mistshenko, 1968**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1105108>

**Native status: Distribution in the natural zone:** High mountain, steppe, desert steppe and desert.

**Distribution: in Mongolia:** G.-alt. Mistshenko (1968):493, Batkhuyag (1995):28, Altanchimeg (2011):16, Batkhuyag and Batnaran (2021):62.



***Eclipophleps lucida* Mistshenko, 1973**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1105110>

**Native status: Distribution in the natural zone:** High mountain, steppe, desert steppe and desert.

**Distribution: in Mongolia:** Uvs, Khovd. Mistshenko (1973), Chogsomzhav (1977):86, Altanchimeg (2011):16, Batkhuyag and Batnaran (2021):62.

***Eclipophleps similis* Mistshenko, 1951**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1105111>

**Native status: Distribution in the natural zone:** High mountain, steppe, desert steppe and desert.

**Distribution: in Mongolia:** Uvs, Khovd, B.-Ulg., Tuv. Mistshenko and Bey-Bienko (1951):549, Steinmann (1968):243, Batkhuyag (1995):27, Sergeev et al. (2009):108, Altanchimeg (2011):16, Batkhuyag and Batnaran (2021):61.

***Eclipophleps tarbinskii* Orishchenko, 1960**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1105112>

**Native status: Distribution in the natural zone:** High mountain, steppe and desert steppe.

**Distribution: in Mongolia:** Altai. Orishchenko. (1960), Chogsomzhav (1989):91, Batkhuyag (1995):27, Sergeev et al. (2009):108, Altanchimeg (2011):16, Altanchimeg and Nonnaizab (2013), Batkhuyag and Batnaran (2021):61.

***Chorthippus (Altichorthippus) intermedius* (Bey-Bienko, 1926)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1106089>

**Native status: Distribution in the natural zone:** Taiga, forest-steppe and steppe.

**Distribution: in Mongolia:** Uvs, Khuvs., Bulg., Sel., Tuv, Khent., S.-baat., Do., U-khang., A.-khang. Tarbinsky (1927):492, Cejchan and Maran (1966):183, Mistshenko (1968):492, Steinmann (1967):116-117, Steinmann (1968):243, Chogsomzhav (1969b):127, Storozhenko and Paik (2007), Altanchimeg et al. (2013b):65, Batkhuyag and Batnaran (2021):87.

**Global distribution:** Tuva, Altai-Sayan Mts, Sakha (Yakutia), S Russian Far East (including Sakhalin), Mongolia N, NE China, Tibet (Sergeev et al. 2020).

### ***Chorthippus (Chorthippus) albomarginatus* (De Geer, 1773)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1105771>

**Native status: Distribution in the natural zone:** Taiga, forest-steppe, steppe, desert steppe and desert

**Distribution: in Mongolia:** Uvs, Zav., Bulg., Khovd. Bey-Bienko (1933):115, Chogsomzhav (1969b):128, Chogsomzhav 1972:173, Günther 1971:123, Chogsomzhav 1989:92, Sergeev 1995:251, Sergeev et al. (2009):109, Altanchimeg and Nonnaizab (2013) Batnaran et al. (2016):14-15, Sergeev et al. (2020):10, Batkhuyag and Batnaran (2021):87.

**Global distribution:** South Korea (Storozhenko et al. 2015) Tuva, Europe (except the extreme north and the southern parts), W Siberia, N Kazakhstan, N Mongolia (Sergeev et al. 2020).

### ***Chorthippus (Chorthippus) caliginosus* Mistshenko, 1951**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1105762>

**Native status: Distribution in the natural zone:** Forest steppe.

**Distribution: in Mongolia:** Sel. Garai (2001):751, Batkhuyag and Batnaran (2021):87.

**Global distribution:** Southern regions of Transbaikalia, Amur area, Khabarovsk region and south-east of China (Tishechkin and Bukhvalova 2009), Mongolia Garai (2001).

### ***Chorthippus (Chorthippus) dorsatus* (Zetterstedt, 1821)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1105795>

**Native status: Distribution in the natural zone:** Forest steppe, steppe and desert steppe.

**Distribution: in Mongolia:** Uvs, S.-baat. Chogsomzhav (1969b):128, Chogsomzhav (1972):173, Sergeev et al. (2020):8, Batkhuyag and Batnaran (2021):86.

**Global distribution:** Tuva, Transbaikalia, Mongolia, NE China (Sergeev et al. 2020).



***Chorthippus (Chorthippus) hammarstroemi* (Miram, 1907)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1105913>

**Native status: Distribution in the natural zone:** Taiga, forest-steppe, steppe, desert steppe and desert.

**Distribution: in Mongolia:** Bulg., A.-khang., Sel., Tuv, S.-baat., Khuvs. Cejchan and Maran (1966):183, Chogsomzhav (1971):80, Sergeev (1995):249, Storozhenko and Paik (2007):173, Storozhenko et al. (2015):242, Altanchimeg and Nonnaizab (2013), Altanchimeg et al. (2013b):65, Batnaran et al. (2016):34, Sergeev et al. (2020):7, Batkhuyag and Batnaran (2021):83.

**Global distribution:** South Korea (Storozhenko et al. 2015), Tuva, Altai-Sayan Mts, Transbaikalia, S Sakha (Yakutia), S Russian Far East, Mongolia, N, NE China (Sergeev et al. 2020).

***Chorthippus (Chorthippus) dichrous* (Eversmann, 1859)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1105796>

**Nomenclature:**

*Chorthippus dorsatus australia* Predtechenskii (1928):89.

**Native status: Distribution in the natural zone:** High mountain, forest-steppe, steppe, desert steppe and desert.

**Distribution: in Mongolia:** B.-Ulg., S.-baat., Do., B.-khong., Sel., Khovd. Pylnov (1916):278, Chogsomzhav (1971):82, Chogsomzhav (1972):173, Sergeev (1995):251, Childebaev and Storozhenko (2001), Sergeev et al. (2009):109, Batnaran et al. (2016):33, Sergeev et al. (2020):9, Batkhuyag and Batnaran (2021):86.

**Global distribution:** Tuva, S, SE Europe, S Siberia (up to Tuva), Asia Minor, Caucasus, Iran, Kazakhstan, Tien Shan, Pamiro-Alay, NW China, Mongolia (Sergeev et al. 2020).

***Chorthippus (Chorthippus) fallax* (Zubovski, 1900)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1105903>

**Native status: Distribution in the natural zone:** Taiga, forest-steppe, steppe and desert steppe.

**Distribution: in Mongolia:** B.-Ulg., Uvs, Zav., Khuvs., A.-khang., Bulg., Sel., Tuv, Khent., S.-baat., Da., G.-alt., B.-khong. Ikonnikov (1911):253, Pylnov (1916):278, Bey-

Bienko (1933):115, Cejchan and Maran (1966):183, Mistshenko (1968):492, Günther (1971):122, Chogsomzhav (1968):57, Chogsomzhav (1969b):128, Chogsomzhav (1972):172, Munkhbat (2010):16, Altanchimeg and Nonnaizab (2013), Altanchimeg et al. (2013b):65, Storozhenko et al. (2015):244, Sergeev et al. (2020):85.

**Global distribution:** Tuva, Siberia (except the western part of West Siberian Plain and the extreme north), S Russian Far East, E Kazakhstan, N Mongolia, N, NE China, South Korea (Storozhenko et al. 2015, Sergeev et al. 2020).

### ***Chorthippus (Chorthippus) turanicus* Tarbinsky, 1925**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1105894>

**Native status: Distribution in the natural zone:** Steppe.

**Distribution: in Mongolia:** G.-alt. Chogsomzhav (1974b):29, Chogsomzhav (1989):92, Sergeev et al. (2009):109, Batkhuyag and Batnaran (2021):84.

**Global distribution:** China, Xinjiang (Tarbinsky 1925), Turkestan, Kazakhstan, Tadzhikistan, Uzbekistan (Childebaev and Storozhenko 2001), Mongolia (Sergeev et al. 2009).

### ***Chorthippus (Chorthippus) ilkazi* Uvarov, 1934**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1105936>

**Native status: Distribution in the natural zone:** Steppe and desert steppe.

**Distribution: in Mongolia:** Tuv, S.-baat., Do. Steinmann (1967):116, Altanchimeg et al. (2013b):65.

**Global distribution:** Western Asia, Mongolia, Turkey (Uvarov 1934).

### ***Chorthippus (Glyptobothrus) apricarius* (Linnaeus, 1758)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1105949>

**Native status: Distribution in the natural zone:** Forest steppe and steppe.

**Distribution: in Mongolia:** Uvs, Bulg., Sel., Tuv, Khent., U-khang. Pylnov (1916):278, Steinmann (1967):114, Chogsomzhav (1968):57-58, Chogsomzhav (1969b):127, Chogsomzhav (1989):92, Childebaev and Storozhenko (2001):34, Sergeev et al. (2009):108, Altanchimeg and Nonnaizab (2013), Sergeev et al. (2020):6, Batkhuyag and Batnaran (2021):82.



**Global distribution:** Tuva, Europe (except the extreme north), S Siberia, Asia Minor, Kazakhstan, NW, N, NE China, Mongolia (Sergeev et al. 2020).

***Chorthippus (Glyptobothrus) biguttulus* (Linnaeus, 1758)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1106017>

**Native status: Distribution in the natural zone:** Taiga, forest-steppe, steppe and desert steppe.

**Distribution: in Mongolia:** Uvs, Bulg., Sel., Tuv, Khent., U-khang. Pyl'nov (1916):278, Bey-Bienko (1933):115, Steinmann (1967):115, Mistshenko (1968):492, Steinmann (1968):243, Chogsomzhav (1969b):127, Chogsomzhav (1974b):28, Sergeev (1995):248, Sergeev et al. (2009):108, Altanchimeg and Nonnaizab (2013), Myagmar et al. (2019):56, Batkhuyag and Batnaran (2021):79.

**Global distribution:** France, Switzerland, Yugoslavia (Miksic 1981), Mongolia (Steinmann 1968), Inner Mongolia (Li et al. 2007).

***Chorthippus (Glyptobothrus) brunneus* (Thunberg, 1815)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1106050>

**Native status: Distribution in the natural zone:** Taiga, forest-steppe, steppe and desert steppe.

**Distribution: in Mongolia:** B.-Ulg., Uvs, Khuvs., Bulg., Tuv, S.-baat., Do., Khovd., B.-khong., Du.-govi. Bolívar (1901):226, Bey-Bienko (1933):115, Steinmann (1968):243, Chogsomzhav (1970), Chogsomzhav (1989):92, Childebaev and Storozhenko (2001), Altanchimeg et al. (2013b):65, Batnaran et al. (2016):33, Sergeev et al. (2019):34, Batkhuyag and Batnaran (2021):78.

**Global distribution:** Tuva, S Russia up to Tuva, N Kazakhstan, N Mongolia (Benediktov 1999, Sergeev et al. 2019).

***Chorthippus (Glyptobothrus) maritimus* Mistshenko, 1951**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1106041>

**Native status: Distribution in the natural zone:** High mountain and desert steppe.

**Distribution: in Mongolia:** Altanchimeg and Nonnaizab (2013):81.

**Global distribution:** Caucasus, Transcaucasus, East Europe, Krym and China (Ramme 1939), Mongolia (Altanchimeg and Nonnaizab 2013).

### ***Chorthippus (Glyptobothrus) dubius* (Zubovski, 1898)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1105932>

**Native status: Distribution in the natural zone:** Forest steppe, steppe and desert steppe.

**Distribution: in Mongolia:** B.-Ulg., Uvs, Zav., Khuvs., A.-khang., Bulg., Sel., Tuv, Khent., Do., G.-alt., B.-khong., U.-khang., U.-govi. Bolívar (1901):226, 231, Bey-Bienko (1933):115, Steinmann (1967):116, Mistshenko (1968):492, Chogsomzhav (1968):58, Chogsomzhav (1969b):128, Chogsomzhav (1972):171, Günther (1971):121, Sergeev (1995):248, Childebaev and Storozhenko (2001), Altanchimeg and Nonnaizab (2013), Altanchimeg et al. (2013b):65, Batnaran et al. (2016):34, Sergeev et al. (2019):38, Batkhuyag and Batnaran (2021):81.

**Global distribution:** Tuva, SE European Russia, S Siberia, Kazakhstan, Mongolia, NE, N, C China (Sergeev et al. 2019).

### ***Chorthippus (Glyptobothrus) mollis* (Charpentier, 1825)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1106033>

**Native status: Distribution in the natural zone:** Desert steppe and desert.

**Distribution: in Mongolia:** Altanchimeg and Nonnaizab (2013):81, Batkhuyag and Batnaran (2021):80.

**Global distribution:** Tuva, Europe (except the extreme north), Siberia (except the extreme north), Asia Minor, Caucasus, Kazakhstan, Middle Asia, N Iran (Sergeev et al. 2019), Mongolia (Altanchimeg and Nonnaizab 2013).

### ***Chorthippus (Glyptobothrus) vagans* (Eversmann, 1848)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1105971>

**Nomenclature:**

*Gomphocerus subsinuatus* Fischer (1849):42.

**Native status: Distribution in the natural zone:** Forest steppe.

**Distribution: in Mongolia:** Altanchimeg and Nonnaizab (2013):81, Batkhuyag and Batnaran (2021):87.

**Global distribution:** from West Europe far into temperate Asia (Willemse 2009), Mongolia (Altanchimeg and Nonnaizab 2013).



***Pseudochorthippus montanus* (Charpentier, 1825)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1106350>

**Nomenclature:**

*Stenobothrus* (*Chorthippus*) *longicornis* Jacobson and Bianchi. (1905):182,234.

*Chorthippus longicornis* Jacobson and Bianchi. (1905):182.

**Native status: Distribution in the natural zone:** Taiga, forest-steppe, steppe, desert steppe and desert.

**Distribution: in Mongolia:** B.-Ulg., Uvs, Zav., A.-khang., Bulg., Tuv, B.-khong., Khovd. Mistshenko (1968):492, Chogsomzhav (1969b):127, Chogsomzhav (1972):173, Günther (1971):122, Sergeev (1995):251, Childebaev and Storozhenko (2001), Sergeev et al. (2009):109, Altanchimeg et al. (2013b):65, Storozhenko et al. (2015):246, Sergeev et al. (2020):15, Batkhuyag and Batnaran (2021):85.

**Global distribution:** South Korea (Storozhenko et al. 2015), Tuva, N, C Europe, Siberia, Russian Far East, N Kazakhstan, Mongolia, NE China, N Korea (Sergeev et al. 2020).

***Pseudochorthippus parallelus* (Zetterstedt, 1821)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1106327>

**Native status: Distribution in the natural zone:** Steppe.

**Distribution: in Mongolia:** Uvs. Chogsomzhav (1977), Batkhuyag and Batnaran (2021):85.

**Global distribution:** Tuva, Europe (except the extreme north), Siberia (except the north, but including the central parts of Sakha (Yakutia) and the southern parts of Krasnoyarsk Region and the Republic of Khakassia (Ivanova 1967), Asia Minor, Caucasus, Kazakhstan, Tien Shan, Mongolia [including the Mongolian part of Uvs-Nuur Basin (Chogsomzhav 1977), NW China (Sergeev et al. 2020).

***Aeropedellus baliolus* Mistshenko, 1951**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1106225>

**Native status: Distribution in the natural zone:** Steppe.

**Distribution: in Mongolia:** Tuv, S.-baat., U-khang. Steinmann (1967):114, Altanchimeg et al. (2014):133, Popova et al. (2020):602.

**Global distribution:** Kazakhstan and Mongolia (Altanchimeg et al. 2014).

***Aeropedellus chogsomjavi* Altanchimeg, Chen & Nonnaitzb, 2014**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1220729>

**Native status: Distribution in the natural zone:** Steppe.

**Distribution: in Mongolia:** Khuvs. Altanchimeg and Nonnaizab (2013):81, Altanchimeg et al. (2014):133, Batkhuyag and Batnaran (2021):76.

***Aeropedellus reuteri* (Miram, 1907)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1106234>

**Native status: Distribution in the natural zone:** Steppe and desert steppe.

**Distribution: in Mongolia:** Khent., U-khang. Steinmann (1967):114, Altanchimeg et al. (2014):133, Sergeev et al. (2020):4, Batkhuyag and Batnaran (2021):76.

**Global distribution:** Mongolia, Type localities and Khakassia (Sergeev et al. 2020).

***Aeropedellus variegatus* (Fischer von Waldheim, 1846)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1106239>

**Native status: Distribution in the natural zone:** Forest steppe and steppe.

**Distribution: in Mongolia:** B.-Ulg, Uvs, Zav., Khuvs., A.-khang, Bulg., Tuv., Khent., Khovd, G.-alt., B.-khong., U-khang. Cejchan and Maran (1966):182, Steinmann (1968):242, Steinmann (1967):113, Chogsomzhav (1969b):127, Günther (1971):120, Sergeev (1995):247, Sergeev et al. (2009):108, Altanchimeg (2011):16, Altanchimeg and Nonnaizab (2013), Altanchimeg et al. (2013b):65, Altanchimeg et al. (2014):133, Sergeev et al. (2020):4, Batkhuyag and Batnaran (2021):75.

**Global distribution:** Tuva, N Caucasus, NE European Russia, Siberia, N Europe, mountains of S Europe, E Kazakhstan, Mongolia (Sergeev et al. 2020).

***Gomphocerus sibiricus* (Linnaeus, 1767)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1106148&Next=Taxa.aspx>

**Native status: Distribution in the natural zone:** Forest steppe and steppe.



**Distribution: in Mongolia:** Uvs, Zav., Khuvs., A.-khang., Bulg., Tuv, Khent., Khovd, G.-alt., U-khang., U.-govi., Cejchan and Maran (1966):180, Günther (1971):119, Mistshenko (1968):492, Chogsomzhav (1989):91, Sergeev et al. (2009):108, Altanchimeg and Nonnaizab (2013), Altanchimeg et al. (2013b):65, Batkhuyag and Batnaran (2021):74.

**Global distribution:** Tuva, N, NE Europe, Siberia (except the extreme north), N Kazakhstan, N Mongolia, NE China (Sergeev et al. 2020).

### ***Gomphocerippus rufus* (Linnaeus, 1758)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1106254>

#### **Nomenclature:**

*Acrydium clavicorne* De Geer (1773):482.

**Native status: Distribution in the natural zone:** Forest steppe and steppe.

**Distribution: in Mongolia:** Tuv. Childebaev and Storozhenko (2001), Munkhbat (2010):168, Batkhuyag and Batnaran (2021):73.

**Global distribution:** Mongolia (Childebaev and Storozhenko 2001), Tuva, Europe (except the extreme north), Siberia (except the extreme north and NE parts), Amur Region, N Caucasus, W Kazakhstan, NE China (Sergeev et al. 2020).

### ***Myrmeleotettix palpalis* (Zubovski, 1900)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1106193>

**Native status: Distribution in the natural zone:** Forest steppe, steppe, desert steppe and desert.

**Distribution: in Mongolia:** B.-Ulg., Uvs, Zav., Khuvs., Khovd, G.-alt., Sel., Tuv., Khent., A.-khang., U-khang., U.-govi. Zubovski (1900):13, Pylnov (1916):278, Bey-Bienko (1933):118, Cejchan and Maran (1966):180, Chogsomzhav (1968):56-58, Chogsomzhav (1969b):127, Chogsomzhav (1974b):28, Chogsomzhav (1989):91, Childebaev and Storozhenko (2001), Garai (2001):751, Sergeev et al. (2009):108, Altanchimeg (2011):16, Altanchimeg and Nonnaizab (2013), Altanchimeg et al. (2013b):65, Sergeev et al. (2019):29, Batkhuyag and Batnaran (2021):72.

**Global distribution:** Tuva, S Siberia (from the Altai Mts. to Dauria), Amur Region, E Kazakhstan, Mongolia, China (Sergeev et al. 2019).

### ***Myrmeleotettix zaitzevi* Mistshenko, 1968**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1106195>

**Native status: Distribution in the natural zone:** Desert steppe.

**Distribution: in Mongolia:** Du.-govi., Tuv. Mistshenko (1968):490, Chogsomzhav (1989):91, Munkhbat (2010):168, Batkhuyag and Batnaran (2021):72.

### ***Stauroderus scalaris* (Fischer von Waldheim, 1846)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1106274>

**Native status: Distribution in the natural zone:** Forest steppe and steppe.

**Distribution: in Mongolia:** Uvs, Bulg., Tuv. Pylnov (1916):278, Cejchan and Maran (1966):184, Steinmann (1964):382, Günther (1971):121, Chogsomzhav (1969b):127, Chogsomzhav (1972):168, Chogsomzhav (1989):92, Sergeev et al. (2009):108, Altanchimeg and Nonnaizab (2013), Altanchimeg et al. (2013b):65, Batnaran et al. (2016):35, Sergeev et al. (2019):32, Batkhuyag and Batnaran (2021):77.

**Global distribution:** Tuva, Europe (except the north), S Siberia (up to Buryatia), Asia Minor, Caucasus, Kazakhstan, Tien Shan, Pamiro-Alay, NW China, Mongolia, NW Iran (Sergeev et al. 2019).

### ***Schmidtia cris schmidtii* (Ikonnikov, 1913)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1114808>

**Nomenclature:**

*Chorthippus nakazimai* Furukawa et al. (1950):30.

**Native status: Distribution in the natural zone:** Forest steppe.

**Distribution: in Mongolia:** Bulg., Tuv. Mistshenko (1968) :492, Günther (1971):122, Altanchimeg et al. (2013b):65, Sergeev et al. (2019):39, Batkhuyag and Batnaran (2021):83.

**Global distribution:** Tuva, Transbaikalia, S Russian Far East, Mongolia, NE China, Korea, Japan (Sergeev et al. 2019).

### ***Mesasippus kozhevnikovi* (Tarbinsky, 1925)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1106179>



**Native status: Distribution in the natural zone:** Desert steppe and desert.

**Distribution: in Mongolia:** B.-Ulg., Uvs, Zav., Khuvs., Tuv, A.-khang., Bulg., Tuv., Sel., Khent., S.-baat., Khovd, U-khang. Mistshenko and Bey-Bienko (1951):501, Mistshenko (1968):492, Steinmann (1968):240, 242, Chogsomzhav (1972):168, Chogsomzhav (1974b):28, Chogsomzhav (1989):91, Gorochoy et al. (1989):104, Childebaev and Storozhenko (2001), Batkhuyag and Batnaran (2021):77.

**Global distribution:** China, Xinjiang, Mongolia, Kazakhstan (Mistshenko and Bey-Bienko 1951, Childebaev and Storozhenko 2001).

### ***Dasyhippus barbipes* (Fischer von Waldheim, 1846)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1106266>

**Native status: Distribution in the natural zone:** Steppe, desert steppe and desert.

**Distribution: in Mongolia:** Khuvs., Sel., Tuv, S.-baat., Do., Khovd, Du.-govi. Günther (1971):120, Steinmann (1967):113, Pylnov (1916):278, Tarbinsky (1931):140, Chogsomzhav (1968):58, Chogsomzhav (1971):71, Chogsomzhav (1972):166, Chogsomzhav (1989):91, Altanchimeg and Nonnaizab (2013), Altanchimeg et al. (2013b):65, Batnaran et al. (2016):34, Sergeev et al. (2020):5, Batkhuyag and Batnaran (2021):75.

**Global distribution:** Tuva, SE Altai, Transbaikalia, Mongolia, N China (Sergeev et al. 2020).

### ***Egnatioides desertus* Uvarov, 1926**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1109695>

**Native status: Distribution in the natural zone:** Desert.

**Distribution: in Mongolia:** Khovd, Altai Transaltai gobi. Günther (1971):113, Chogsomzhav (1989):90, Batkhuyag and Batnaran (2021):47.

**Global distribution:** Mongolia (Günther 1971), Kazakhstan and Turkestan (Childebaev and Storozhenko 2001).

### ***Omocestus (Omocestus) haemorrhoidalis* (Charpentier, 1825)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1107287>

**Native status: Distribution in the natural zone:** Forest steppe and steppe.

**Distribution: in Mongolia:** Zav., Bulg., Tuv, Khent., S.-baat., Khovd, U-khang., Sel., Uvs, A.-khang., Khuvs. Pylnov (1916):277, Bey-Bienko (1933):118, Cejchan and Maran (1966):180, Steinmann (1967):110, Steinmann (1968):241, Chogsomzhav (1968):58, Chogsomzhav (1969b):127, Chogsomzhav (1974b):28, Sergeev (1995):246, Sergeev et al. (2009):108, Altanchimeg and Nonnaizab (2013), Altanchimeg et al. (2013b):65, Storozhenko et al. (2015):254, Sergeev et al. (2019):26, Batkhuyag and Batnaran (2021):71.

**Global distribution:** Tuva, Europe (except the extreme north), Siberia (except the extreme north), S Russian Far East, Asia Minor, Caucasus, Kazakhstan, Tien Shan, Pamiro-Alay, Mongolia, N China, South Korea (Sergeev et al. 2019).

### ***Omocestus (Omocestus) petraeus* (Brisout de Barneville, 1856)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1107268>

**Native status: Distribution in the natural zone:** Steppe.

**Distribution: in Mongolia:** Uvs, Bulg., Tuv, Khent., U-khang. Steinmann (1964):382, Steinmann (1967):110, Chogsomzhav (1969b):127, Chogsomzhav (1971):66, Chogsomzhav (1972):164, Batnaran et al. (2016):35, Sergeev et al. (2020):30, 32, Batkhuyag and Batnaran (2021):71.

**Global distribution:** Tuva, S Europe, S Siberia (up to S Krasnoyarsk Region), Asia Minor, Caucasus, N Kazakhstan (Sergeev et al. 2019), Mongolia (Sergeev et al. 2020).

### ***Omocestus (Omocestus) rufipes* (Zetterstedt, 1821)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1107273>

**Native status: Distribution in the natural zone:** Steppe.

**Distribution: in Mongolia:** Chogsomzhav (1969b):91, Childebaev and Storozhenko (2001):32, Altanchimeg and Nonnaizab (2013).

**Global distribution:** Russian C, E, S, Kazakhstan, Siberia, Mongolia (Childebaev and Storozhenko 2001).

### ***Omocestus (Omocestus) tzendsureni* Günther, 1971**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1107282>

**Native status: Distribution in the natural zone:** Forest steppe, steppe and desert steppe.



**Distribution: in Mongolia:** Khovd, G.-alt. Günther (1971):116, Chogsomzhav (1989):91, Sergeev (1995):246, Batkhuyag and Batnaran (2021):71.

**Global distribution:** China, Xinjiang, Mongolia (Günther 1971).

### ***Omocestus (Omocestus) viridulus* (Linnaeus, 1758)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1107300>

**Native status: Distribution in the natural zone:** Forest steppe, steppe, desert steppe and desert.

**Distribution: in Mongolia:** Khuvs., Bulg., Sel., S.-baat., Do., Khovd, G.-alt., Uvs. Steinmann (1964):382, Steinmann (1967):110, Steinmann (1968):241, Chogsomzhav (1968):57, Chogsomzhav (1969b):127, Chogsomzhav (1972):163, Chogsomzhav (1974b):28, Günther (1971):116, Chogsomzhav (1989):91, Sergeev (1995):108, Childebaev and Storozhenko (2001), Sergeev et al. (2009):108, Altanchimeg and Nonnaizab (2013), Altanchimeg et al. (2013b):65, Batnaran et al. (2016):36, Sergeev et al. (2019):26, Batkhuyag and Batnaran (2021):70.

**Global distribution:** Tuva, Europe (except the extreme north), S Siberia, Amur Region, S Khabarovsk Region, Asia Minor, Caucasus, Kazakhstan, Tien Shan, N China, Mongolia, N Korea (Sergeev et al. 2019).

### ***Stenobothrus carbonarius* (Eversmann, 1848)**

- Species-ID <http://orthoptera.speciesfile.org/common/basic/Taxa.aspx/common/Links/Taxa.aspx?TaxonNameID=1107430>

**Native status: Distribution in the natural zone:** Forest steppe.

**Distribution: in Mongolia:** Sel. Sergeev (1995):246, Childebaev and Storozhenko (2001):31, Batnaran (2008):47, Batnaran et al. (2016):36, Popova et al. (2020):600, Batkhuyag and Batnaran (2021):69.

**Global distribution:** Mongolia (Childebaev and Storozhenko 2001), Tuva, SE European Russia, S Siberia (up to Buryatia), Kazakhstan (Sergeev et al. 2019).

### ***Stenobothrus newskii* Zubovski, 1900**

- Species-ID <http://orthoptera.speciesfile.org/common/basic/Taxa.aspx/common/Links/Taxa.aspx?TaxonNameID=1107354>

**Native status: Distribution in the natural zone:** Taiga and forest-steppe.

**Distribution: in Mongolia:** G.-alt. Zubovski (1900):9, Bey-Bienko (1926):10, Chogsomzhav (1972):162, Sergeev et al. (2009):108, Altanchimeg (2011):16, Sergeev et al. (2019):24, Batkhuyag and Batnaran (2021):70.

**Global distribution:** Tuva, Altai Mts. (including S Altai), NW Mongolia (Sergeev et al. 2019).

### ***Stenobothrus eurasius* Zubovski, 1898**

- Species-ID <http://orthoptera.speciesfile.org/common/basic/Taxa.aspx/common/Links/Taxa.aspx?TaxonNameID=1107386>

**Native status: Distribution in the natural zone:** Forest steppe and steppe.

**Distribution: in Mongolia:** Sel., Tuv. Chogsomzhav (1971):64, Chogsomzhav (1989):91, Sergeev (1995):246, Munkhbat (2010):168, Altanchimeg and Nonnaizab (2013), Altanchimeg et al. (2013b):65, Sergeev et al. (2019):24, Batkhuyag and Batnaran (2021):70.

**Global distribution:** Tuva, SE European Russia, S Siberia, N Kazakhstan, Tien Shan, N Mongolia (Sergeev et al. 2019).

### ***Stenobothrus fischeri* (Eversmann, 1848)**

- Species-ID <http://orthoptera.speciesfile.org/common/basic/Taxa.aspx/common/Links/Taxa.aspx?TaxonNameID=1107392>

**Native status: Distribution in the natural zone:** Desert steppe and desert.

**Distribution: in Mongolia:** Bulg., Sel., Khovd. Pylnov (1916):277, Günther (1971):116, Chogsomzhav (1972):163, Childebaev and Storozhenko (2001), Sergeev et al. (2009):108, Altanchimeg et al. (2013b):65, Sergeev et al. (2019):23, Batkhuyag and Batnaran (2021):68.

**Global distribution:** Tuva, S Europe, S Siberia (up to Tuva), Asia Minor, Caucasus, Kazakhstan, a mountain of Middle Asia, Mongolia (Sergeev et al. 2019).

### ***Stenobothrus lineatus* (Panzer, 1796)**

- Species-ID <http://orthoptera.speciesfile.org/common/basic/Taxa.aspx/common/Links/Taxa.aspx?TaxonNameID=1107404>

**Native status: Distribution in the natural zone:** Forest steppe and steppe.

**Distribution: in Mongolia:** Zav., Bulg., Tuv, Khent., S.-baat.,. Cejchan and Maran (1966):180, Steinmann (1967):110, Mistshenko (1968):490, Chogsomzhav (1969b):127, Chogsomzhav (1989):91, Sergeev (1995):246, Childebaev and Storozhenko (2001), Sergeev et al. (2019):23, Batkhuyag and Batnaran (2021):68.



**Global distribution:** Tuva, Europe (except the northern part), S Siberia up to Sakha (Yakutia), Caucasus, N Kazakhstan, N Mongolia, Russian Far East, Dauria (ssp. *flavotobialis*) (Storozhenko 1985, Sergeev et al. 2019).

***Megaulacobothrus aethalinus* (Tarbinsky, 1927)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1106289>

**Native status: Distribution in the natural zone:** Forest steppe.

**Distribution: in Mongolia:** Bogdkhan Mountain, Ulaanbaatar, Altanchimeg et al. (2013a).

**Global distribution:** China (Li et al. 2007), Mongolia (Altanchimeg et al. 2013a).

***Bryodema gebleri* (Fischer von Waldheim, 1836)**

- Species-ID <http://orthoptera.speciesfile.org/common/basic/taxa.aspx/common/editimsgnd/Taxa.aspx?TaxonNameID=1104225>

**Native status: Distribution in the natural zone:** Steppe, desert steppe and desert.

**Distribution: in Mongolia:** Uvs. Bey-Bienko (1933):119, Chogsomzhav (1969b):128, Chogsomzhav (1972):180, Sergeev (1995):253, Sergeev et al. (2009):109, Altanchimeg et al. (2015):69, Batkhuyag et al. (2019):107, Sergeev et al. (2020):24, 25, Batkhuyag and Batnaran (2021):101, Dey et al. (2021):335.

**Global distribution:** Tuva, S Ural Mts, Altai-Sayan Mts (except SE Altai), Transbaikalia, Kazakhstan, Tien Shan (except the eastern part), NW China, W Mongolia (Sergeev et al. 2020).

***Bryodema heptapotanicum* Bey-Bienko, 1930**

- Species-ID <http://orthoptera.speciesfile.org/common/basic/taxa.aspx/common/editimsgnd/Taxa.aspx?TaxonNameID=1104216>

**Native status: Distribution in the natural zone:** Desert steppe.

**Distribution: in Mongolia:** G.-alt. Altanchimeg and Nonnaizab (2013):81, Batkhuyag and Batnaran (2021):101.

**Global distribution:** China, Xinjiang (Bey-Bienko 1930), Kazakhstan (Childebaev and Storozhenko 2001), Mongolia (Altanchimeg and Nonnaizab 2013).

### ***Bryodema kozlovi* Bey-Bienko, 1930**

- Species-ID <http://orthoptera.speciesfile.org/common/basic/taxa.aspx/common/editimgsnd/Taxa.aspx?TaxonNameID=1104218>

**Native status: Distribution in the natural zone:** Desert steppe.

**Distribution: in Mongolia:** Bey-Bienko (1930):101.

**Global distribution:** Mongolia (Bey-Bienko 1930), China, Inner Mongolia (Alashan) (Zheng et al. 2012).

### ***Bryodema luctuosum* (Stoll, 1813)**

- Species-ID <http://orthoptera.speciesfile.org/common/basic/taxa.aspx/common/editimgsnd/Taxa.aspx?TaxonNameID=1104229>

**Native status: Distribution in the natural zone:** Steppe, desert steppe and desert.

**Distribution: in Mongolia:** Uvs, Zav., Khuvs., A.-khang., Sel., Tuv, Khent., S.-baat., B.-khong., Du.-govi., B.-khong., U-khang. Bolívar (1901):226, 233, Pylnov (1916):279, Bey-Bienko (1930):113, Cejchan and Maran (1966):185, Steinmann (1967):118, Steinmann (1968):247, Mistshenko (1968):495, Chogsomzhav (1968):57, Chogsomzhav (1969b):128, Chogsomzhav (1972):182, Sergeev (1995):254, Altanchimeg and Nonnaizab (2013), Batnaran et al. (2016):37, Batkhuyag and Batnaran (2021):101, Dey et al. (2021):336.

**Global distribution:** Siberia, China and Mongolia (Benediktov 2016).

### ***Bryodema miramae* Bey-Bienko, 1930**

- Species-ID <http://orthoptera.speciesfile.org/common/basic/taxa.aspx/common/editimgsnd/Taxa.aspx?TaxonNameID=1104236>

**Native status: Distribution in the natural zone:** Desert steppe.

**Distribution: in Mongolia:** Altanchimeg and Nonnaizab (2013):81, Batkhuyag and Batnaran (2021):101.

**Global distribution:** Mongolia (Altanchimeg and Nonnaizab 2013), China (Zhang et al. 2006).

### ***Bryodema nigripennis* Mistshenko & Gorochoy, 1989**

- Species-ID <http://orthoptera.speciesfile.org/common/basic/taxa.aspx/common/editimgsnd/Taxa.aspx?TaxonNameID=1104220>

**Native status: Distribution in the natural zone:** Desert steppe.



**Distribution: in Mongolia.** B.-khong. Mistshenko and Gorochoy (1989):99, Batkhuyag and Batnaran (2021):101.

**Global distribution:** Mongolia (Mistshenko and Gorochoy 1989), China (Zhang et al. 2006).

### ***Compsorhipis bryodemoides* Bey-Bienko, 1932**

- Species-ID <http://orthoptera.speciesfile.org/common/basic/taxa.aspx/common/edittaxon/distribution/Taxa.aspx?TaxonNameID=1104250>

**Native status: Distribution in the natural zone:** Desert steppe and desert.

**Distribution: in Mongolia:** Uvs, Bulg., S.-baat., Khovd, G.-alt., B.-khong., U-khang., B.-khong., Du.-govi., U.-govi. Bey-Bienko (1932):84, :606, Cejchan and Maran (1966):186, Mistshenko (1968):495, Chogsomzhav (1968):59, Chogsomzhav (1972):185, Chogsomzhav (1989):94, Sergeev (1995):254, Batnaran et al. (2016):38, Batkhuyag et al. (2019):107, Myagmar et al. (2019):56, Batkhuyag and Batnaran (2021):102, Dey et al. (2021):339.

### ***Compsorhipis davidiana* (Saussure, 1888)**

- Species-ID <http://orthoptera.speciesfile.org/common/basic/taxa.aspx/common/edittaxon/distribution/Taxa.aspx?TaxonNameID=1104251>

**Native status: Distribution in the natural zone:** Desert steppe and desert.

**Distribution: in Mongolia:** U.-govi., Uvs, Khovd, B.-khong., Du.-govi. Bolívar (1901):226, 235, Chogsomzhav (1969b):128, Chogsomzhav (1972):184, Chogsomzhav (1989):94, Batkhuyag et al. (2019):107, Sergeev et al. (2020):28, Batkhuyag and Batnaran (2021):102.

**Global distribution:** Tuva, S Transbaikalia, Mongolia, NW, N China (Sergeev et al. 2020).

### ***Compsorhipis orientalis* Chogsomzhav, 1989**

- Species-ID <http://orthoptera.speciesfile.org/common/basic/taxa.aspx/common/edittaxon/distribution/Taxa.aspx?TaxonNameID=1104253>

**Native status: Distribution in the natural zone:** Steppe.

**Distribution: in Mongolia:** Do.-govi. Chogsomzhav (1989):94, Batkhuyag and Batnaran (2021):103, Dey et al. (2021):340.

**Global distribution:** China (Yin and Wang 2005), Mongolia (Dey et al. 2021).

### ***Bryodemella (Bryodemella) holdereri* (Krauss, 1901)**

- Species-ID <http://orthoptera.speciesfile.org/common/basic/taxa.aspx/common/specimen/SpecimensByTaxon.aspx?TaxonNameID=1104267>

#### **Nomenclature:**

*Bryodema occidentale* Bey-Bienko (1930):87.

**Native status: Distribution in the natural zone:** Forest steppe, steppe, desert steppe and desert.

**Distribution: in Mongolia:** Uvs, Zav., Khuvs., A.-khang., Bulg., Sel., Tuv., Khovd, S.-baat., Do., Khovd, G.-alt., B.-khong., U-khang., Du.-govi. Bey-Bienko (1930):85, Chogsomzhav and Shurovenkov (1963):61, Günther (1971):124, Steinmann (1967):119, Steinmann (1968):246, Mistshenko (1968):495, Chogsomzhav (1968):57, Chogsomzhav (1969b):128, Chogsomzhav (1972):179, Sergeev (1995):253, Altanchimeg and Nonnaizab (2005):234, Sergeev et al. (2009):109, Altanchimeg and Nonnaizab (2013), Altanchimeg et al. (2013b):65, Batnaran et al. (2016):37, Sergeev et al. (2020):21, Batkhuyag and Batnaran (2021):99, Dey et al. (2021):337.

**Global distribution:** Tuva, SE Altai, Khakassia, S Krasnoyarsk Region, Transbaikalia, Mongolia, N, NE China (Sergeev et al. 2020).

### ***Bryodemella (Bryodemella) tuberculata* (Fabricius, 1775)**

- Species-ID <http://orthoptera.speciesfile.org/common/basic/taxa.aspx/common/specimen/Taxa.aspx?TaxonNameID=1104270>

**Native status: Distribution in the natural zone:** Taiga, forest-steppe, steppe and desert steppe.

**Distribution: in Mongolia:** B.-Ulg., Uvs, Zav., Khuvs., A.-khang., Bulg., Sel., Tuv, Khent., S.-baat., B.-khong., U-khang., U.-govi. Bolívar (1901):226, Uvarov (1914):171, Pylnov (1916):279, Bey-Bienko (1930):91, Cejchan and Maran (1966):184, Steinmann (1967):118, Steinmann (1968):247, Mistshenko (1968):495, Chogsomzhav (1968):57, Chogsomzhav (1969b):128, Chogsomzhav (1972):179, Batkhuyag and Batnaran (2021):99, Dey et al. (2021):339.

**Global distribution:** Tuva, Europe (except the extreme north and the southern regions of W Europe), Siberia and Far East (northwards to Magadan Region), Kazakhstan, Mongolia, Korea, China, Tibet, Himalayas (Sergeev et al. 2020).

### ***Bryodemella (Marikovskiella) orientalis* (Bey-Bienko, 1930)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1104280>



**Native status: Distribution in the natural zone:** Steppe, desert steppe and desert.

**Distribution: in Mongolia:** Uvs, Zav., Khovd, G.-alt., B.-khong., U-khang., Du.-govi. Bey-Bienko (1930):101, Bey-Bienko (1933):119, Chogsomzhav (1968):59, Chogsomzhav (1972):180, Sergeev (1995):253, Sergeev et al. (2009):109, Altanchimeg (2011):16, Batnaran et al. (2016):38, Batkhuyag and Batnaran (2021):100.

***Bryodemella (Marikovskiella) semenovi* (Ikonnikov, 1911)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1104279>

**Native status: Distribution in the natural zone:** High mountain.

**Distribution: in Mongolia:** Altanchimeg and Nonnaizab (2013):81, Batkhuyag and Batnaran (2021):100.

**Global distribution:** Kazakhstan (Childebaev and Storozhenko 2001), Mongolia (Altanchimeg and Nonnaizab 2013).

***Bryodemella (Marikovskiella) zaisanicum fallax* (Bey-Bienko, 1930)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1104285>

**Native status: Distribution in the natural zone:** Forest steppe.

**Distribution: in Mongolia:** B.-Ulg., Uvs, Khovd, Bulg. Günther (1971):125, Bey-Bienko (1930):97, Bey-Bienko (1933):119, Chogsomzhav (1989):95, Sergeev et al. (2009):109, Sergeev et al. (2020):24, Batkhuyag and Batnaran (2021):100.

**Global distribution:** NW Mongolia, NW China, E Kazakhstan (Sergeev et al. 2020).

***Angaracris barabensis* (Pallas, 1773)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1104200>

**Nomenclature:**

*Angaracris acrohylina* Bi (1986):195.

*Angaracris morulimarginis* Huang (1981):83.

*Angaracris morulipennis* Zheng and He. (1994):251.

*Angaracris neimongolensis* Zheng and Han. (1998):25, 28.

*Angaracris nigrimarginis* Zheng and Ren. (1993):427.

*Angaracris nigripennis* Lian Z and Zheng (1984):305.

*Oedipoda rhodopa* Fischer von Waldheim (1836):348.

*Bryodema barabensis* var. *rhodoptila* Karny (1908):49.

*Bryodema barabense* var. *roseipennis* Krauss (1901):237.

*Angaracris ulashanicus* Li (1981):173.

*Oedipoda hospes* Fischer von Waldheim (1846):295.

*Oedipoda lugubris* Fischer von Waldheim (1846):298.

*Oedipoda thunbergi* Stål (1861):345.

**Native status: Distribution in the natural zone:** Forest steppe, steppe, desert steppe and desert.

**Distribution: in Mongolia:** B.-ulg., Uvs, Zav., Khuvs., A.-khang., Bulg., Tuv., Khent., S.-baat., Do., Khovd, B.-khong., U-khang. Bolívar (1901):226, 223, Pyl'nov (1916):280, Bey-Bienko (1930):119, Bey-Bienko (1933):119, Chogsomzhav and Shurovenkov (1963), Cejchan and Maran (1966):186, Steinmann (1967):119, Steinmann (1968):267, Mistshenko (1968):495, Chogsomzhav (1968):57-58, Chogsomzhav (1970):128, Chogsomzhav (1972):183, Altanchimeg et al. (2013b):65, Myagmar et al. (2019):56, Sergeev et al. (2020):26-28, Batkhuyag (1995):102, Dey et al. (2021):334.

**Global distribution:** Tuva, S Siberia, Amur Region, N Kazakhstan, Mongolia, N, NE China (Sergeev et al. 2020).

### ***Aiolopus thalassinus* (Fabricius, 1781)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1103315>

**Native status: Distribution in the natural zone:** Steppe.

**Distribution: in Mongolia:** Uvs, A.-khang., Bulg., Khent., S.-baat., Do., B.-khong. Altanchimeg and Nonnaizab (2013):81 which is new registered species in Mongolia.

**Global distribution** S and C Europe, N-Africa, Caucasus, Turkey, Iran, Afghanistan, C Asia, Indian subcontinent, China, SW-Siberia (Garai 2010), South Korea (Storozhenko et al. 2015), Mongolia (Altanchimeg and Nonnaizab 2013).

### ***Epacromius pulverulentus* (Fischer von Waldheim, 1846)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1103429>

**Native status: Distribution in the natural zone:** Forest steppe, steppe and desert steppe.



**Distribution: in Mongolia:** Uvs, A.-khang., Bulg., Khent., S.-baat., Do., B.-khong. Mistshenko (1968):494, Günther (1971):124, Chogsomzhav (1971):86, Chogsomzhav (1972):176, Chogsomzhav (1989):94, Sergeev (1995):251, Childebaev and Storozhenko (2001), Storozhenko et al. (2015):280, Batnaran et al. (2016):38, Myagmar et al. (2019):56, Sergeev et al. (2020):16.

**Global distribution:** South Korea (Storozhenko et al. 2015), Tuva, S Europe, S Siberia, S Russian Far East, Kazakhstan, Tien Shan, Kashmir, Mongolia, China (Sergeev et al. 2020).

### ***Epacromius tergestinus* (Megerle von Mühlfeld, 1825)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1103430>

#### **Nomenclature:**

*Epacromia viridis* Uvarov (1910):372.

**Native status: Distribution in the natural zone:** Steppe, desert steppe and desert.

**Distribution: in Mongolia:** Uvs, Bulg., Sel., Khovd, B.-khong., U.-govi. Pylnov (1916):279, Mistshenko (1968):494, Günther (1971):123, Chogsomzhav (1989):94, Sergeev (1995):251, Childebaev and Storozhenko 2001, Altanchimeg and Nonnaizab (2013), Altanchimeg et al. (2013b):65, Myagmar et al. (2019):56, Sergeev et al. (2020):16, Batkhuyag and Batnaran (2021):95.

**Global distribution:** Tuva, S Europe, S Siberia, Caucasus, Kazakhstan, Tien Shan, Pamiro-Alay, Afghanistan, NW Mongolia, NW China, Tibet (Sergeev et al. 2020).

### ***Oedaleus asiaticus* Bey-Bienko, 1941**

- Species-ID <http://orthoptera.speciesfile.org/common/basic/Taxa.aspx?TaxonNameID=1103223>

**Native status: Distribution in the natural zone:** Forest steppe, steppe and desert steppe.

**Distribution: in Mongolia:** Uvs, Bulg., Sel., Tuv, Khent., S.-baat., Do., Khovd, G.-alt., B.-khong., U.-khang., Du.-govi., U.-govi. Bey-Bienko (1941):152, Chogsomzhav and Shurovenkov (1963):61, Chogsomzhav (1968):57, Chogsomzhav (1969b):128, Chogsomzhav (1972):177, Steinmann (1967):118, Steinmann (1968):246, Mistshenko (1968):495, Günther (1971):124, Childebaev and Storozhenko (2001), Altanchimeg and Nonnaizab (2013), Batnaran et al. (2016):38, Myagmar et al. (2019):56, Sergeev et al. (2020):17.

**Global distribution:** Siberia, Kazakhstan, China, Inner Mongolia, Mongolia, Russia (Bey-Bienko 1941, Childebaev and Storozhenko 2001, Sergeev et al. 2020).

### ***Oedaleus decorus* (Germar, 1825)**

- Species-ID <http://orthoptera.speciesfile.org/common/basic/Taxa.aspx?TaxonNameID=1103222>

**Native status: Distribution in the natural zone:** High mountain.

**Distribution: in Mongolia:** Chogsomzhav (1989):93, Sergeev (1995):252, Altanchimeg et al. (2013b):66, Batkhuyag and Batnaran (2021):96, Dey et al. (2021):342.

**Global distribution:** N Africa, Caucasus range, W Asia, C Asia, W Pakistan, Afghanistan, N India (Garai 2010), Mongolia (Dey et al. 2021).

### ***Oedaleus infernalis* Saussure, 1884**

- Species-ID <http://orthoptera.speciesfile.org/common/basic/Taxa.aspx?TaxonNameID=1103218>

**Nomenclature:**

*Oedaleus infernalis montanus* Mistshenko and Bey-Bienko (1951):221.

*Microgastrimargus taeguensis* Lee and Park. (1992):61-64.

*Oedaleus infernalis amurensis* Ikonnikov, 1911:25

**Native status: Distribution in the natural zone:** Steppe and desert steppe.

**Distribution: in Mongolia:** G.-alt., Uvs, Sel. Steinmann (1968):246, Pyl'nov (1916):279, Chogsomzhav (1971):88, Childebaev and Storozhenko (2001), Sergeev et al. (2020):20, Batkhuyag and Batnaran (2021):96.

**Global distribution:** South Korea (Storozhenko et al. 2015), S Russian Far East, NE, E China, Tibet, Japan, Mongolia (Sergeev et al. 2020).

### ***Locusta migratoria* (Linnaeus, 1758)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1103074>

**Native status: Distribution in the natural zone:** Desert steppe and desert.

**Distribution: in Mongolia:** Khovd, B.-khong., U.-govi., Uvs. Chogsomzhav (1968):59, Mistshenko (1968):495, Günther (1971):124, Chogsomzhav (1989):93, Sergeev et al. (2009):109, Altanchimeg and Nonnaizab (2013), Storozhenko et al. (2015):285, Myagmar et al. (2019):56, Sergeev et al. (2020):17, Batkhuyag and Batnaran (2021):96.



**Global distribution:** South Korea (Storozhenko et al. 2015), Tuva, Eurasia (except the north), Africa, Australia and many islands, Mongolia (Sergeev et al. 2020).

### ***Psophus stridulus* (Linnaeus, 1758)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1103244>

#### **Nomenclature:**

*Psophus stridulus* var. *ebneri* Karny (1908):57-58.

*Nocarodes femoralis* Fischer von Waldheim (1846):270.

*Acrydium fuliginosum* Olivier (1791):223.

*Acrydium rubripenne* De Geer (1773):472.

*Psophus stridulus samniticus* Baccetti (1959):397.

**Native status: Distribution in the natural zone:** Forest steppe and steppe.

**Distribution: in Mongolia:** Du.-govi., Sel. Bolívar (1901):226, Chogsomzhav 1972:178, Chogsomzhav (1989):93, Childebaev and Storozhenko (2001), Altanchimeg and Nonnaizab (2013), Altanchimeg et al. (2013b):65, Batnaran et al. (2016):39, Batkhuyag and Batnaran (2021):98.

**Global distribution:** Mongolia (Altanchimeg et al. 2013b), Tuva, Europe (except the extreme North), S Siberia, S Russian Far East, N Kazakhstan, NE China, Korea (Sergeev et al. 2020).

### ***Celes skalozubovi* Adelung, 1906**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1103549>

**Native status: Distribution in the natural zone:** Forest steppe, steppe, desert steppe and desert.

**Distribution: in Mongolia:** Uvs, Zav., Khuvs., Bulg., Tuv. Bey-Bienko and Mistshenko (1951):587, Mistshenko (1968):495, Chogsomzhav (1969b):128, Chogsomzhav (1972):178, Chogsomzhav (1989):94, Sergeev (1995):252, Altanchimeg and Nonnaizab (2013), Altanchimeg et al. (2013b):65, Batnaran et al. (2016):39, Sergeev et al. (2020):20, Batkhuyag and Batnaran (2021):98, Dey et al. (2021):341.

**Global distribution:** Tuva, S Siberia, N Kazakhstan, Mongolia, N China (Sergeev et al. 2020).

### ***Stethophyma grossum* (Linnaeus, 1758)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1104012>

#### **Nomenclature:**

*Gryllus flavipes* Gmelin (1789):2088.

*Gryllus (Locusta) germanicus* Stoll (1813):41.

*Acrydium rubripes* De Geer (1773):477.

**Native status: Distribution in the natural zone:** Taiga, forest-steppe and steppe.

**Distribution: in Mongolia:** B.-Ulg., Uvs, Zav., Khuvs., Tuv, A.-khang., Bulg., Sel., Khent., S.-baat., Khovd, U-khang. Pylnov (1916):279, Bey-Bienko (1933):118, Steinmann (1967):109, Mistshenko (1968):494, Chogsomzhav (1968):57, Chogsomzhav (1969b):127, Chogsomzhav (1972):162, Chogsomzhav (1974b):27, Günther (1971):115, Chogsomzhav (1989):93, Sergeev (1995):251, Childebaev and Storozhenko (2001), Altanchimeg et al. (2013b):65, Storozhenko et al. (2015):272, Batnaran et al. (2016):39, Sergeev et al. (2020):15, Batkhuyag and Batnaran (2021): 95.

**Global distribution:** Mongolia, Tuva and almost all temperate Eurasia (except the extreme north) (Sergeev et al. 2020).

### ***Sphingoderus carinatus* (Saussure, 1888)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1103651>

**Native status: Distribution in the natural zone:** Desert steppe and desert.

**Distribution: in Mongolia:** Khovd, U.-govi. Mistshenko (1937):186, Steinmann (1968): 247, Chogsomzhav (1968):59, Chogsomzhav (1972):187, Chogsomzhav (1989):95, Childebaev and Storozhenko (2001), Sergeev et al. (2009): 109, Batkhuyag and Batnaran (2021):109.

**Global distribution:** China, Xinjiang, Kazakhstan, Afghanistan, Iran, Mongolia (Childebaev and Storozhenko 2001).

### ***Sphingonotus (Sphingonotus) tzaidamicus* Mistshenko, 1937**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1103783>

**Native status: Distribution in the natural zone:** Desert steppe and desert.



**Distribution: in Mongolia:** Do.-govi. Chogsomzhav (1975):45, Chogsomzhav (1989):95, Altanchimeg (2011):16, Myagmar et al. (2019):56, Batkhuyag and Batnaran (2021):104, Dey et al. (2021):350.

**Global distribution:** China (Mistshenko 1937), Mongolia (Dey et al. 2021).

### ***Sphingonotus (Sphingonotus) beybienkoi* Mistshenko, 1937**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1103810>

**Native status: Distribution in the natural zone:** Steppe, desert steppe and desert.

**Distribution: in Mongolia:** Uvs, Tuv, G.-alt., B.-khong., U-khang., Khovd, Du.-govi., U.-govi. Mistshenko (1937):148, Mistshenko (1968):495, Günther (1971):128, Chogsomzhav (1972):185, Chogsomzhav (1989):95, Sergeev (1995):255, Sergeev et al. (2009):109, Altanchimeg et al. (2015):69, Batnaran et al. (2016):39, Myagmar et al. (2019):56, Sergeev et al. (2020):28, Dey et al. (2021):343.

**Global distribution:** Tuva, S Transbaikalia, C, E Kazakhstan, N Kyrgyzstan, Mongolia, NW China (Sergeev et al. 2020).

### ***Sphingonotus (Sphingonotus) coerulipes* Uvarov, 1922**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1103827>

**Native status: Distribution in the natural zone:** Desert steppe, taiga and forest-steppe.

**Distribution: in Mongolia:** Northwest Mongolia Chogsomzhav (1989):95, Sergeev et al. (2009):109, Popova et al. (2020):604, Batkhuyag and Batnaran (2021):106, Dey et al. (2021):344.

**Global distribution:** Crimea, Lower Volga range, Caucasus, Turkey, Iran, Kazakhstan, Mongolia, S-Siberia (Garai 2010).

### ***Sphingonotus (Sphingonotus) elegans* Mistshenko, 1937**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1103719>

**Native status: Distribution in the natural zone:** Desert steppe and desert.

**Distribution: in Mongolia:** Uvs, Khovd, B.-khong., U.-govi., U-khang. Mistshenko (1937):165, Mistshenko (1968):495, Chogsomzhav (1968):59, Chogsomzhav (1972):185, Günther (1971):128, Chogsomzhav (1989):95, Garai (2001):752, Sergeev et al.

(2009):109, Batnaran et al. (2016):40, Myagmar et al. (2019):56, Sergeev et al. (2020):29, Dey et al. (2021):343.

**Global distribution:** The Mongolian part of Uvs-Nuur Intermountain Basin (Chogsomzhav 1974b), Middle Asia, NW China (Sergeev et al. 2020).

### ***Sphingonotus (Sphingonotus) gobicus* Chogsomzhav, 1975**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1103705>

**Native status: Distribution in the natural zone:** Desert steppe and desert.

**Distribution: in Mongolia:** Khovd, G.-alt., B.-khong., Do.-govi, Chogsomzhav (1975):44, Chogsomzhav (1989):95, Batkhuyag and Batnaran (2021):105, Dey et al. (2021):345.

### ***Sphingonotus (Sphingonotus) salinus* (Pallas, 1773)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1103776>

**Nomenclature:**

*Sphingonotus suschkini* Adelung (1906):86.

*Oedipoda zinini* Kittary (1849):470.

**Native status: Distribution in the natural zone:** Desert steppe and desert.

**Distribution: in Mongolia:** Khovd. Chogsomzhav (1969a):78, Chogsomzhav (1972):186, Chogsomzhav (1989):95, Sergeev (1995):255, Sergeev et al. (2009):109, Myagmar et al. (2019):56, Sergeev et al. (2020):29, Batkhuyag and Batnaran (2021):108.

**Global distribution:** Tuva, SE Europe, Caucasus (deserts), Kazakhstan (semi-deserts and deserts), Middle Asia, NW China, NW Mongolia (Sergeev et al. 2020).

### ***Sphingonotus (Sphingonotus) halophilus* Bey-Bienko, 1929**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1103732>

**Native status: Distribution in the natural zone:** Desert and desert steppe.

**Distribution: in Mongolia:** Khovd. Günther (1971):128, Batkhuyag and Batnaran (2021):104.



**Global distribution:** Mongolia (Günther 1971), SE part of European Russia, Kazakhstan (Sergeev 2021).

***Sphingonotus (Sphingonotus) mongolicus* Saussure, 1888**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1103759>

**Native status: Distribution in the natural zone:** Taiga, forest-steppe and steppe.

**Distribution: in Mongolia:** Tuv, B.-khong., U.-govi. Saussure (1888):77, 82, Mistshenko (1937):229, Mistshenko (1968):496, Chogsomzhav (1971):106, Chogsomzhav (1972):186, Chogsomzhav (1989):95, Nonnaizab et al. (1999):15, Altanchimeg and Nonnaizab 2013, Altanchimeg et al. (2013b):65, Batkhuyag and Batnaran (2021):108, Dey et al. (2021):346.

***Sphingonotus (Sphingonotus) nebulosus* (Fischer von Waldheim, 1846)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1103863>

**Native status: Distribution in the natural zone:** Desert.

**Distribution: in Mongolia:** Khovd, U.-govi. Chogsomzhav (1968):58, Chogsomzhav (1971):106, Chogsomzhav (1972):186, Chogsomzhav (1975):44, Chogsomzhav (1989):95, Günther (1971):128, Sergeev (1995):255, Myagmar et al. (2019):56, Sergeev et al. (2020):29, Batkhuyag and Batnaran (2021):107.

**Global distribution:** Tuva, SE Altai, Asia Minor, Caucasus, Kazakhstan (except the north), Tien Shanzubo, Pamiro-Alay, Iran, Pakistan, NW Mongolia, NW China (Sergeev et al. 2020).

***Sphingonotus (Sphingonotus) obscuratus latissimus* Uvarov, 1925**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1103875>

**Native status: Distribution in the natural zone:** Desert steppe and desert.

**Distribution: in Mongolia:** Khovd, B.-khong., U.-govi. Mistshenko (1968):491, Chogsomzhav (1968):59, Chogsomzhav (1971):107, Chogsomzhav (1972):186, Günther (1971):129, Chogsomzhav (1989):95, Childebaev and Storozhenko (2001), Batkhuyag and Batnaran (2021):108, Dey et al. (2021):348.

**Global distribution:** Kazakhstan and Mongolia (Childebaev and Storozhenko 2001).

### ***Sphingonotus (Sphingonotus) rubescens* (Walker, 1870)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1103882>

**Native status: Distribution in the natural zone:** High mountain and desert steppe.

**Distribution: in Mongolia:** Uvs, U.-govi. Chogsomzhav (1969a):77, Chogsomzhav (1969b):128, Chogsomzhav (1972):185, Chogsomzhav (1989):95, Sergeev (1995):255, Sergeev et al. (2009):109, Batnaran et al. (2016):40, Myagmar et al. (2019):56, Sergeev et al. (2020):29, Batkhuyag and Batnaran (2021):105, Dey et al. (2021):348.

**Global distribution:** The Mongolian part of Uvs-Nuur Intermountain Basin (Chogsomzhav 1974b). Arid part of N Caucasus, N Africa, SW Asia, deserts of Middle Asia (including mountains), NW Mongolia, NW China (Sergeev et al. 2020).

### ***Helioscirtus moseri* Saussure, 1884**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1103593>

**Native status: Distribution in the natural zone:** Desert.

**Distribution: in Mongolia:** G.-alt. Chogsomzhav (1969b), Batkhuyag and Batnaran (2021):109.

**Global distribution:** Mongolia (Chogsomzhav 1969b), northern Africa and western Asia (Hodjat et al. 2018).

### ***Leptopternis gracilis* (Eversmann, 1848)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1104641>

**Nomenclature:**

*Hyalorrhapis maculipennis* Saussure (1884):195.

*Sphingonotus angustipennis* Werner (1905):201.

*Sphingonotus grobbeni* Chopard (1949):361.

**Native status: Distribution in the natural zone:** Desert steppe and desert.

**Distribution: in Mongolia:** U.-govi. Mistshenko (1968):496, Chogsomzhav (1972):187, Chogsomzhav (1989):95, Garai (2001):753, Childebaev and Storozhenko (2001), Batkhuyag et al. (2019):107, Myagmar et al. (2019):57, Batkhuyag and Batnaran (2021):109.



**Global distribution:** N Africa, Lower Volga range, Caucasus range, Iran, Afghanistan, C Asia, W China, Mongolia (Garai 2001).

### ***Leptopternis iliensis* Uvarov, 1925**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1104645>

**Native status: Distribution in the natural zone:** Desert steppe.

**Distribution: in Mongolia:** Khovd. Günther (1971):129, Chogsomzhav (1989):95, Childebaev and Storozhenko (2001), Batkhuyag and Batnaran (2021):109.

**Global distribution:** Kazakhstan and Mongolia (Childebaev and Storozhenko 2001).

### ***Bohemanella frigida* (Boheman, 1846)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1110374>

**Native status: Distribution in the natural zone:** Taiga and forest-steppe.

**Distribution: in Mongolia:** Uvs, Zav., Khuvs., Tuv. Uvarov (1914):17, Mistshenko (1952):425, Mistshenko (1968):489, Steinmann (1968):240, Cejchan and Maran (1966):178, Chogsomzhav (1969b):127, Chogsomzhav (1972):154, Chogsomzhav (1989):90, Günther (1971):113, Munkhbat (2010):169, Altanchimeg et al. (2013b):64, Sergeev et al. (2019):14, Batkhuyag and Batnaran (2021):44.

**Global distribution:** Tuva, N Eurasia (in the southern parts of Europe in mountains), Alaska, N Canada, Mongolia (Sergeev et al. 2019).

### ***Podisma pedestris* (Linnaeus, 1758)**

- Species-ID <http://orthoptera.speciesfile.org/Common/Basic/Taxa.aspx?TaxonNameID=1111031>

**Native status: Distribution in the natural zone:** Taiga and forest-steppe.

**Distribution: in Mongolia:** Sel., Khuvs. Mistshenko (1952), Chogsomzhav (1972):154, Chogsomzhav (1989):90, Altanchimeg et al. (2013b):64, Sergeev et al. (2019):13, Batkhuyag and Batnaran (2021):43.

**Global distribution:** Tuva, Europe, W Siberia (forest steppes and steppes), E Siberia (up to the central parts of Yakutia), mountains of S Siberia, N Caucasus, NW and N Kazakhstan, Dzungarian Alatau, E Tien Shan, Tarbagatai Mts, N Mongolia (Sergeev et al. 2019).

### ***Prumna primnoa* (Motschulsky, 1846)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1111290>

#### **Nomenclature:**

*Podisma sachalinensis* Matsumura (1911):5.

*Podisma viridis* Fischer von Waldheim (1846):248.

**Native status: Distribution in the natural zone:** Forest steppe and steppe.

**Distribution: in Mongolia:** Khent., Sel., Tuv. Pylnov (1916):280, Cejchan and Maran (1966): 178, Chogsomzhav (1989):90, Batnaran (2008):43, Batnaran et al. (2016):36, Sergeev et al. (2019):13, Batkhuyag and Batnaran (2021):43.

**Global distribution:** Tuva, S Siberia, the southern part of Russian Far East (except the southern part of Primorsky Region), including Sakhalin and Kunashir, N Mongolia (Sergeev et al. 2019).

### ***Ognevia longipennis* (Shiraki, 1910)**

- Species-ID <http://orthoptera.speciesfile.org/Common/Basic/Taxa.aspx?TaxonNameID=1111098>

#### **Nomenclature:**

*Eirenephilus debilis* Ikonnikov (1911):265.

*Podisma alpina nippona* Furukawa (1929):171,177.

**Native status: Distribution in the natural zone:** Taiga and forest steppe.

**Distribution: in Mongolia:** Khent., Sel. Bey-Bienko and Mistshenko (1951):236, Chogsomzhav (1989):90, Storozhenko and Paik (2007):157, Altanchimeg et al. (2013b):64, Storozhenko et al. (2015):220, Sergeev et al. (2019):13, Batkhuyag and Batnaran (2021):45.

**Global distribution:** Tuva, S Siberia (mainly in mountains), S Russian Far East, including Sakhalin and S Kurile Islands, E Kazakhstan, N Mongolia, N, NE China, Korea, Japan (Sergeev et al. 2019).

### ***Zubovskya koeppenii* (Zubovski, 1900)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1111120>

**Native status: Distribution in the natural zone:** Forest steppe.



**Distribution: in Mongolia:** Khuvs. Chogsomzhav (1989):90, Batkhuyag and Batnaran (2021):43.

**Global distribution:** Mongolia (Chogsomzhav 1989) , Tuva, WSE, Altay-Sayan Mts. including W Altay (Sergeev et al. 2019).

### ***Zubovskya mongolica* Storozhenko, 1986**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1111118>

**Native status: Distribution in the natural zone:** Forest steppe.

**Distribution: in Mongolia:** Khuvs. Storozhenko (1986):53, Sergeev et al. (2019):12.

**Global distribution:** Mongolia and Siberia (Storozhenko 1986, Sergeev et al. 2019).

### ***Calliptamus abbreviatus* Ikonnikov, 1913**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1112890>

**Nomenclature:**

*Calliptamus doii* Lee and Lee (1985):24.

*Calliptamus abbreviatus* f. *holoptera* Ramme (1952):308.

*Calliptamus sibiricus* Wnukowskij (1926):91.

**Native status: Distribution in the natural zone:** High mountain, forest steppe, desert steppe and desert.

**Distribution: in Mongolia:** Uvs, Zav., Khuvs., Bulg., Sel., Khent., Do., Khovd, B.-khong, U-khang, Du.-govi., U.-govi. Pylnov (1916):280, Mistshenko (1952):531, Mistshenko (1968):489, Steinmann (1968):240, Chogsomzhav (1968):57, Chogsomzhav (1969b):127, Chogsomzhav (1972):155, Chogsomzhav (1975):38, Günther (1971):113, Batnaran (2008):44, Sergeev (1995):240, Childebaev and Storozhenko (2001):25, Altanchimeg (2011):16, Altanchimeg and Nonnaizab 2013, Altanchimeg et al. (2013b):65, Storozhenko et al. (2015):225, Batnaran et al. (2016):31, Sergeev et al. (2019):15, Myagmar et al. (2019):56, Batkhuyag and Batnaran (2021):45.

**Global distribution:** Tuva, S Siberia (from the south-eastern part of W Siberian Plain to Daura), the southern part of the Russian Far East, NE, E Kazakhstan, N Mongolia, N, NE, E China, South Korea (Sergeev et al. 2019).

### ***Calliptamus barbarus* subsp. *cephalotes* Fischer-Waldheim, 1846**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1112930>

**Native status: Distribution in the natural zone:** Steppe, desert steppe and desert.

**Distribution: in Mongolia:** Khovd, G.-alt., B.-khong., U.-govi. Mistshenko (1952):544, Mistshenko (1968):489, Chogsomzhav (1968):59, Chogsomzhav (1989):90, Childebaev and Storozhenko (2001):25, Garai (2001):402, Altanchimeg and Nonnaizab (2013), Batnaran et al. (2016):31, Myagmar et al. (2019):56, Batkhuyag and Batnaran (2021):46.

**Global distribution:** N Africa, Caucasus, Turkey, Iran, N-Afghanistan, Kazakhstan, Mongolia, W China, Siberia (Garai 2001).

### ***Calliptamus italicus* (Linnaeus, 1758)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1112938>

**Native status: Distribution in the natural zone:** Steppe.

**Distribution: in Mongolia:** Khuvs. Mistshenko and Bey-Bienko (1951):256, Chogsomzhav (1971):53, Chogsomzhav (1989):90, Childebaev and Storozhenko (2001):25, Sergeev et al. (2009):108, Altanchimeg and Nonnaizab 2013, Batkhuyag and Batnaran (2021):46.

**Global distribution:** N Africa, Turkey, from the Caucasus through Iran, Afghanistan, W Pakistan, to NW Mongolia, W China and W Siberia (Garai 2001).

### ***Dericorys annulata* (Fieber, 1853)**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1117733>

**Nomenclature:**

*Dericorys lazurescens* Uvarov (1914):142, 146.

*Derocorystes* (*Cyphophorus*) *roseipennis* Redtenbacher (1889):30.

**Native status: Distribution in the natural zone:** Desert steppe.

**Distribution: in Mongolia:** Khovd, B.-khong., U.-govi. Mistshenko and Bey-Bienko (1951):151, Mistshenko (1952):97, Mistshenko (1968):489, Chogsomzhav (1968):59, Chogsomzhav (1972):153, Chogsomzhav (1974b):26, Steinmann (1971):146, Childebaev and Storozhenko (2001):21, Altanchimeg et al. (2015):69, Myagmar et al. (2019):57, Batkhuyag and Batnaran (2021):39.

**Global distribution:** Kazakhstan, Afghanistan, China, Mongolia (Childebaev and Storozhenko 2001).

***Beybienkia lithophila* Gorochov & Mistshenko, 1989**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1117444>

**Native status: Distribution in the natural zone:** Desert steppe.

**Distribution: in Mongolia:** B.-khong. Podgornaya and Gorochov 1989:105, Batkhuyag and Batnaran 2021:37.

**Global distribution:** Mongolia (Ünal 2016).

***Beybienkia songorica* Tsyplenkov, 1956**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1117445>

**Native status: Distribution in the natural zone:** Desert.

**Distribution: in Mongolia:** Altai, Transaltai gobi Chogsomzhav (1989):89, Batkhuyag and Batnaran (2021):37.

**Global distribution:** Mongolia (Chogsomzhav 1989), China (Tsyplenkov 1956).

***Mongolotmethis gobiensis* Bey-Bienko, 1948**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1117481>

**Native status: Distribution in the natural zone:** Steppe and desert steppe.

**Distribution: in Mongolia:** B.-khong., U.-govi., U.-khang. Bey-Bienko (1948):9, Bey-Bienko and Mistshenko (1951):321, Mistshenko (1968):489, Chogsomzhav (1968):58, Altanchimeg (2011):16, Batkhuyag et al. (2014):78, Myagmar et al. (2019):57, Batkhuyag and Batnaran (2021):34.

**Global distribution:** China, Inner Mongolia (Alashan), Mongolia (Batkhuyag et al. 2014).

***Mongolotmethis kozlovi* Bey-Bienko, 1948**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1117480>

**Native status: Distribution in the natural zone:** Steppe and desert steppe



**Distribution: in Mongolia:** Tuv, Du.-govi., B.-khong., U.-govi. Bey-Bienko (1948):10, Bey-Bienko and Mistshenko (1951):321, Mistshenko (1968):489, Chogsomzhav (1968):58, Altanchimeg (2011):16, Batkhuyag et al. (2014):78, Myagmar et al. (2019):57, Batkhuyag et al. (2019):107, Batkhuyag and Batnaran (2021):34.

### ***Mongolotmethis michidi* Batkhuyag, Batnaran & Dorjderem, 2014**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1221002>

**Native status: Distribution in the natural zone:** Steppe and desert steppe.

**Distribution: in Mongolia:** G.-alt., U.-govi. Batkhuyag et al. (2014), Batkhuyag and Batnaran (2021):35.

### ***Rhinotmethis beybienkoi* Chogsomzhav, 1975**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1117505>

**Native status: Distribution in the natural zone:** Desert steppe and desert.

**Distribution: in Mongolia:** Du.-govi. Chogsomzhav (1975):39, Gorochoy et al. (1989), Chogsomzhav (1989):89, Altanchimeg (2011):16, Batkhuyag et al. (2014):78, Batnaran et al. (2016):30, Ünal (2016):59, Batkhuyag and Batnaran (2021):36.

**Global distribution:** Mongolia (Ünal 2016).

### ***Rhinotmethis hummeli* Sjöstedt, 1933**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1117506>

**Native status: Distribution in the natural zone:** Desert steppe and desert.

**Distribution: in Mongolia:** Do.-govi. Bey-Bienko (1948):12, Chogsomzhav (1975):33, Chogsomzhav (1989):89, Sergeev (1995):233, Ünal (2016):59, Myagmar et al. (2019):57.

**Global distribution:** China, Inner Mongolia, Mongolia (Ünal 2016, Batkhuyag and Batnaran 2021).

### ***Asiotmethis similis* Bey Bienko, 1951**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1117408>

**Native status: Distribution in the natural zone:** Forest steppe and desert steppe.

**Distribution: in Mongolia:** G.-alt. Chogsomzhav (1989):89, Batkhuyag and Batnaran (2021):31.

**Global distribution:** Central Asia, Kazakhstan (Bey-Bienko and Mistshenko 1951), Mongolia (Chogsomzhav 1989).

### ***Haplotropis brunneriana* Saussure, 1888**

- Species-ID <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1116957>

#### **Nomenclature:**

*Sulcotropis cyanipes* Yin and Chou. (1979):128.

*Staurotylus mandshuricus* Adelung (1910):344.

*Haplotropis neimongolensis* Jin (1994):251

**Native status: Distribution in the natural zone:** Forest steppe and steppe.

**Distribution: in Mongolia:** Do. Chogsomzhav (1975):41, Chogsomzhav (1989):95, Storozhenko and Paik (2007):133, Storozhenko et al. (2015):184, Batnaran et al. (2016):31, Ünal (2016):60, Batkhuyag and Batnaran (2021):38.

**Global distribution:** China, Inner Mongolia (Jin 1994), Manchuria (Yin and Chou. 1979), Russian Far East, eastern Asia, South Korea, China North-central, Mongolia (Storozhenko and Paik 2007, Ünal 2016).

## **Analysis**

### **Result**

The present study aimed to list the rare and unexplored species of grasshoppers (except long-horned grasshopper and cricket species) in Mongolia. Currently, the grasshopper fauna of Mongolia comprises 128 species, which are distributed in 52 genera and 19 tribes (Table 2). Of these, 34 species are also included in the Checklist of European Orthoptera (Acridoidea) (Suppl. material 2). In addition, Mongolia's distribution of grasshoppers was divided into six distinct natural zones (Fig. 3), (Suppl. material 3). Additionally, a combined cluster analysis was performed using the grasshopper component numbers between neighbouring countries, including Russia, China and South Korea (Suppl. material 4).

Table 1. Similarity matrix of grasshopper in six types of natural zones in Mongolia.						
Natural zone	High Mountain (%)	Taiga (%)	Forest steppe (%)	Steppe (%)	Desert steppe (%)	Desert (%)
High Mountain	*	12.12	11.11	26.37	29.17	21.88
Taiga	*	*	46.58	28.26	20.62	12.31
Forest steppe	*	*	*	59.54	36.76	25.00
Steppe	*	*	*	*	64.52	40.65
Desert steppe	*	*	*	*	*	64.06
Desert	*	*	*	*	*	*

Cluster analysed amongst six different types of natural zone shown in %.

Table 2. Composition of grasshoppers (Acridoidea) in Mongolia.					
No.	Subfamily	Tribe	Genus	Number of Species	Registered in the European red list
1	Acridinae MacLeay, 1821	Acridini MacLeay, 1821	<i>Acrida</i> Linnaeus, 1758	1	-
2	Gomphocerinae Fieber, 1853	Arcypterini Bolívar, 1914	<i>Arcyptera</i> Serville, 1838	4	2
6			<i>Andrea</i> Mistshenko, 1989	1	-
7			<i>Chrysochraon</i> Fischer, 1853	1	-
8			<i>Euthystira</i> Fieber, 1852	1	1
9		Chrysochraontini Brunner von Wattenwyl, 1893	<i>Mongolotettix</i> Rehn, 1928	3	-
12			<i>Podismopsis</i> Zubovski, 1900	2	-
14		Dociostaurini Mistshenko, 1974	<i>Eremippus</i> Uvarov, 1926	3	1
17			<i>Notostaurus</i> Bey-Bienko, 1933	1	1
18		Hypernephini Mistshenko, 1973	<i>Eclipophleps</i> Tarbinsky, 1927	8	-
26		Gomphocerini Fieber, 1853	<i>Chorthippus</i> Fieber, 1852	16	8
42			<i>Aeropedellus</i> Hebard, 1935	4	1
46			<i>Pseudochorthippus</i> Defaut, 2012	2	



No.	Subfamily	Tribe	Genus	Number of Species	Registered in the European red list
48			<i>Gomphocerippus</i> Roberts, 1941	1	1
49			<i>Gomphocerus</i> Thunberg, 1815	1	1
50			<i>Myrmeleotettix</i> Bolívar, 1914	2	-
52			<i>Stauroderus</i> Bolívar, 1897	1	1
53			<i>Schmidtiacris</i> Storozhenko, 2002	1	-
54			<i>Mesasippus</i> Tarbinsky, 1931	1	-
55			<i>Dasyhippus</i> Uvarov, 1930	1	-
56			<i>Dociostaurus</i> Fieber, 1853	2	1
58	Oedipodinae Walker, 1871	Stenobothrini Harz, 1975	<i>Omocestus</i> Bolívar, 1878	5	4
63			<i>Stenobothrus</i> Fischer, 1853	5	3
68			<i>Megaulacobothrus</i> Caudell, 1921	1	
69			<i>Leptopternis</i> Saussure, 1884	2	1
71		Bryodemini Bey-Bienko, 1930	<i>Bryodema</i> Fieber, 1853	6	-
77			<i>Compsorhipis</i> Saussure, 1889	3	-
80			<i>Bryodema</i> Yin, 1982	5	-
85			<i>Angaracris</i> Bey-Bienko, 1930	1	-
86		Epacromiini Brunner von Wattenwyl, 1893	<i>Aiolopus</i> Fieber, 1853	1	-
87			<i>Epacromius</i> Uvarov, 1942	2	1
89		Locustini Kirby, 1825	<i>Oedaleus</i> Fieber, 1853	3	-
92			<i>Locusta</i> Linnaeus, 1758	1	1
93			<i>Psophus</i> Fieber, 1853	1	1
94		Oedipodini Walker, 1871	<i>Celes</i> Saussure, 1884	1	-
95		Parapleurini Brunner von Wattenwyl, 1893	<i>Stethophyma</i> Fischer, 1853	1	-
96		Sphingonotini Johnston, 1956	<i>Sphingoderus</i> Bey-Bienko, 1950	1	1

No.	Subfamily	Tribe	Genus	Number of Species	Registered in the European red list
97			<i>Sphingonotus</i> Fieber, 1852	11	3
108			<i>Helioscirtus</i> Saussure, 1884	1	
109	Melanoplinae Scudder, 1897	Podismini Jacobson, 1905	<i>Bohemanella</i> Ramme, 1951	1	-
110			<i>Podisma</i> Berthold, 1827	1	-
111			<i>Prumna</i> Motschulsky, 1859	1	-
112			<i>Ognevia</i> Ikonnikov, 1911	1	-
113			<i>Zubovskya</i> Dovnar-Zapolskij, 1932	2	-
115	Calliptaminae Jacobson, 1905	Calopteni Brunner von Wattenwyl, 1893	<i>Calliptamus</i> Serville, 1831	3	1
118	Egnatiinae Bey-Bienko & Mistshenko, 1951	Egnatiini Bey-Bienko & Mistshenko, 1951	<i>Egnatioides</i> Vosseler, 1902	1	
119	Dericorythinae Jacobson and Bianchi, 1905	Derocorythini Jacobson & Bianchi, 1905	<i>Dericorys</i> Serville, 1838	1	-
120	Thrinchinae Stål, 1876	Thrinchini Stål, 1876	<i>Beybienkia</i> Tsyplenkov, 1956	2	-
123			<i>Mongolotmethis</i> Bey-Bienko, 1948	3	-
125			<i>Rhinotmethis</i> Sjöstedt, 1933	2	-
127			<i>Asiotmethis</i> Uvarov, 1943	1	-
128		Haplotropiini Sergeev, 1995	<i>Haplotropis</i> Saussure, 1888	1	-
Total	8	19	52	128	34

The rich distribution of Mongolian grasshoppers was characterised by six habitats using the remnant natural habitat and forest types (Fig. 1). The total number of grasshopper species in each natural zone was as follows: 75 species (25.93%) in the steppe, 16 species (5.46%) in the high mountains, 56 species (19.11%) in the forest-steppe, 80 species (27.30%) in the desert steppe, 17 species (5.80%) in the taiga and 48 species (16.38%) in the desert. The similarity matrix between the geographical distribution of grasshopper results presented a high mountain and taiga zone of 12.1%, taiga and forest-steppe zone of 46.57%, forest-steppe and steppe zone of 59.54%, steppe and desert steppe zone of 64.51% and desert steppe and desert zone of 64.06% (Table 1). The species natural zone results used by a single-link Bray-Curtis cluster analysis dendrogram

(Fig. 2a, b) considered desert and desert steppe zones, steppe and forest-steppe zones and high mountain and taiga zones as most closely related. The high mountain and taiga zones were less distributed than the other zones. In addition, the Shannon index and Berger–Parker's index showed six different natural zones (Suppl. material 3). Desert steppe and steppe zones were the most distributed. In contrast, the high mountain and taiga zones were less distributed. Grasshoppers are widely distributed in the desert steppe and steppe natural zone (Suppl. material 1). Twenty grasshopper species that are extensively dispersed in the desert-steppe natural zone have been identified as the indicator species of this zone. These species are listed as follows: *Rhinotmethis hummeli* Sjost.\* *Dericorys annulata* (Fieb.), *Calliptamus barbarus cephalotes* F.-W., *Acrida kozlovi* Mistsh., *Arcyptera meridionalis* Ikonn., *Arcyptera microptera* (F.-W.), *Stenobothrus fischeri* Ev., *Celes skalozubovi* Adel., *Compsorhipis bryodemoides* B.-Bien.\*, *Leptopternis gracilis* (Ev.), *Sphingoderus carinatus* (Sauss.) *Sphingonotus beybienkoi* Mistsh., *Sphingonotus coerulipes* Uv., *Sphingonotus elegans* Mistsh., *Sphingonotus gobicus* Chogs.\*, *Sphingonotus nebulosus* (F.-W.), *Sphingonotus obscuratus latissimus* Uv., *Sphingonotus rubescens* (Walker), *Sphingonotus salinus* (Pall.) and *Sphingonotus tzaidamicus* Mistsh. The indicator species of each of the six types of natural zones are identified by (★) abbreviations (Suppl. material 1). In total, 16 species (13.17%) were endemic and were commonly distributed in desert steppe and desert natural zones. The similarity matrix showed the species distribution of grasshoppers in Mongolia, Russia, China and South Korea. A single-link Bray-Curtis cluster analysis dendrogram was constructed using the combined distribution data for all species. The results exhibited the relationship between a Mongolian grasshopper species and species in Russia and China that were most closely related to the Mongolian species. South Korea was reported as the country that was most distantly linked to Mongolia (Fig. 2). The number of Mongolian grasshopper species was compared with those of grasshopper species in the neighbouring countries, such as Russia and China and South Korea was included using a single-link Bray-Curtis cluster analysis dendrogram (Fig. 2c). The similarity index between the number of species of Mongolian grasshopper and those of grasshopper species in China, Russia and South Korea was 68.36%, 76.55% and 26.84%, respectively. Furthermore, grasshopper species from China showed 36.78% and 65.30% similarity with those in South Korea and Russia, respectively. South Korea showed that 36% of the Russian-distributed species were similar (Table 3). In summary, Russia and China are closely tied to the number of Mongolian grasshopper species, whereas South Korea is distantly related.

In addition, 17 species of grasshoppers are endemic to Mongolia (13.17%), including *Mongolotmethis gobiensis* B.-Bien, *Mongolotmethis kozlovi* B.-Bien, *Rhinotmethis hummeli* Sjost, *Podismopsis altaica* Zub, *Eclipophleps bogdanovi* Tarb, *Eclipophleps carinata* Mistsh, *Eclipophleps confinis* Mistsh, *Eclipophleps glacialis* B.-Bien, *Eclipophleps kerzhneri* Mistsh, *Eclipophleps lucida* Mistsh, *Eclipophleps similis* Mistsh, *Eclipophleps tarbinskii* Oristsh, *Stenobothrus newskii* Zub, *Bryodema gebleri* (F.-W.), *Bryodema* (M.) *orientalis* B.-Bien and *Compsorhipis bryodemoides* B.-Bien. Also, *Chorthippus* (G.) *mollis* (Charp.), *Chorthippus* (G.) *vagans* (Ev.), *Chorthippus* (M.) *chinensis* Tarb., *Aiolopus thalassinus* (Fabr.), *Bryodema heptapotanicum* B.-Bien., *Bryodema miramae* B.-Bien, *Bryodema* (M.) *semenovi* Ikonn., *Sphingonotus gobicus* Chogs. species are new identified species from



Mongolia Altanchimeg and Nonnaizab (2013) (Suppl. material 1). Furthermore, 34 grasshopper species are registered on the European Red List and two of them are listed as Endangered, four are listed as Near Threatened and 28 are classified as Least Concern (Suppl. material 2).

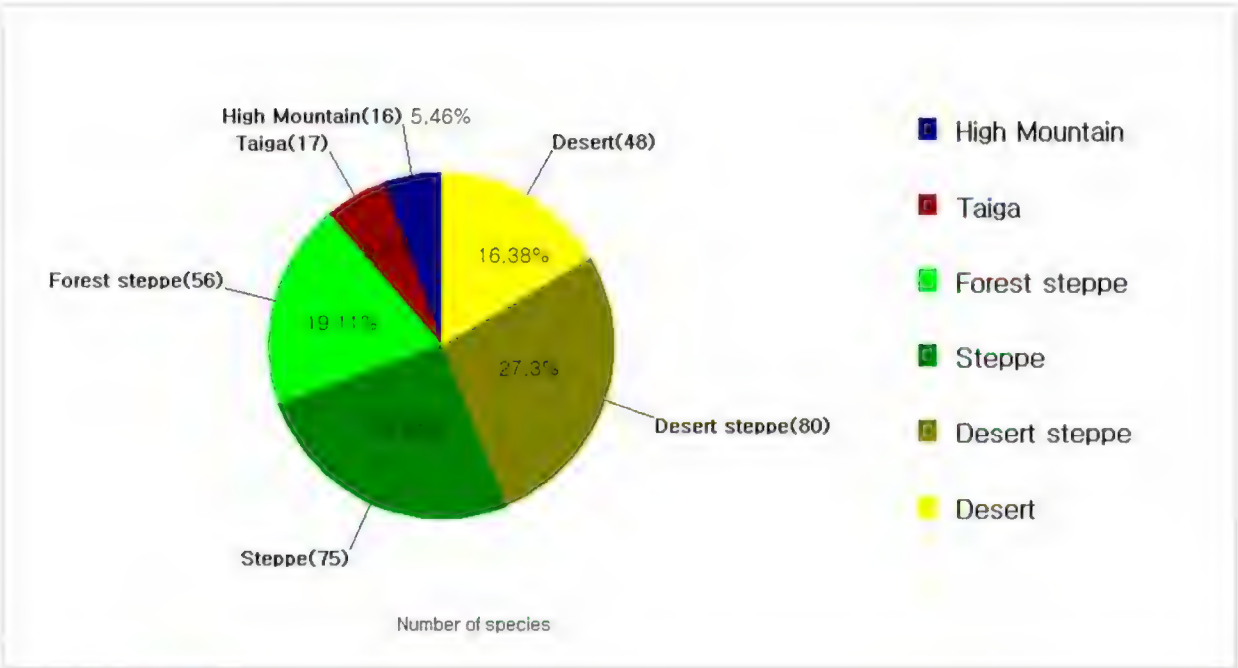


Figure 1. [doi](#)

The grasshopper distribution of six different natural zones in Mongolia. Desert steppe - 80 species (27.30%), Steppe - 75 species (25.93%), Forest steppe - 56 species (19.11%), Desert - 48 species (16.38%), Taiga - 17 species (5.80%), High Mountain - 16 species (5.46%) distributed, respectively.

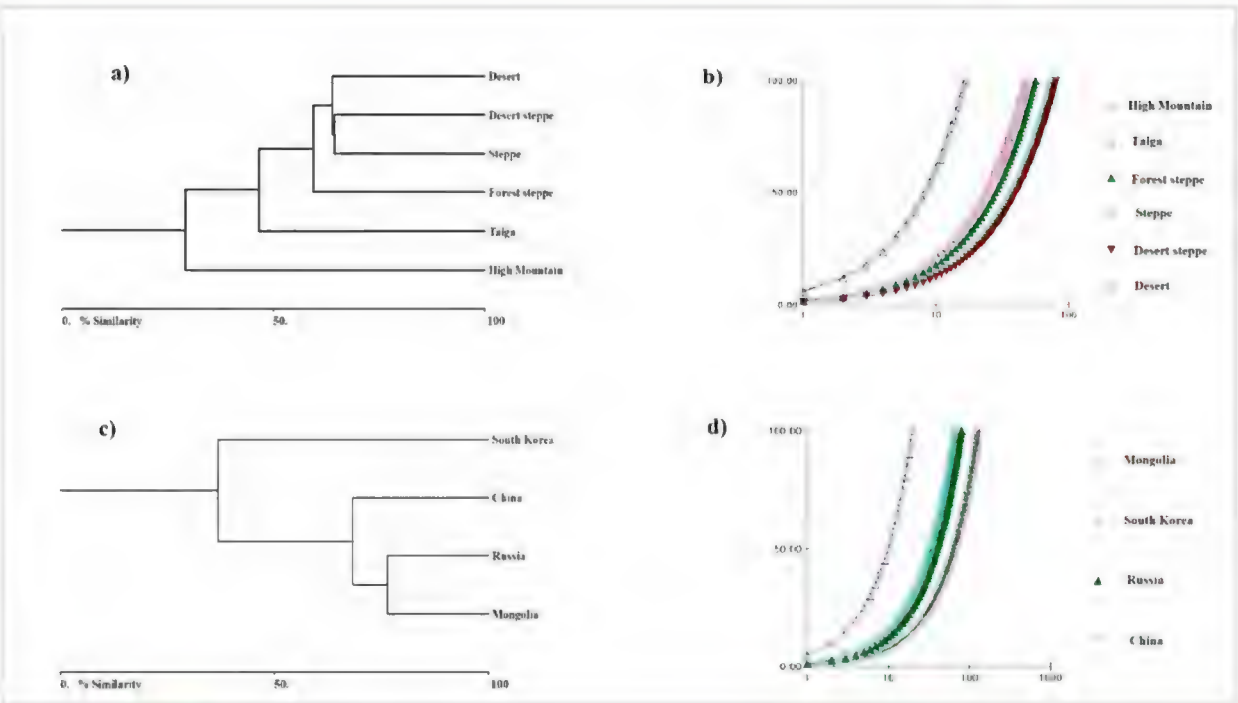


Figure 2. [doi](#)

Dendrogram showing the Bray-Curtis cluster analysis (Single link) of distribution of grasshopper species in six different natural zones (a); Species distribution rank abundance plot of Mongolian grasshopper by Natural Zone (b); Bray-Curtis cluster analysis (single link) neighbouring boundary countries (Russia, China and South Korea) grasshopper distribution (c ); Abundance Plot of boundary countries (Russia, China including South Korea) grasshopper distribution (d).

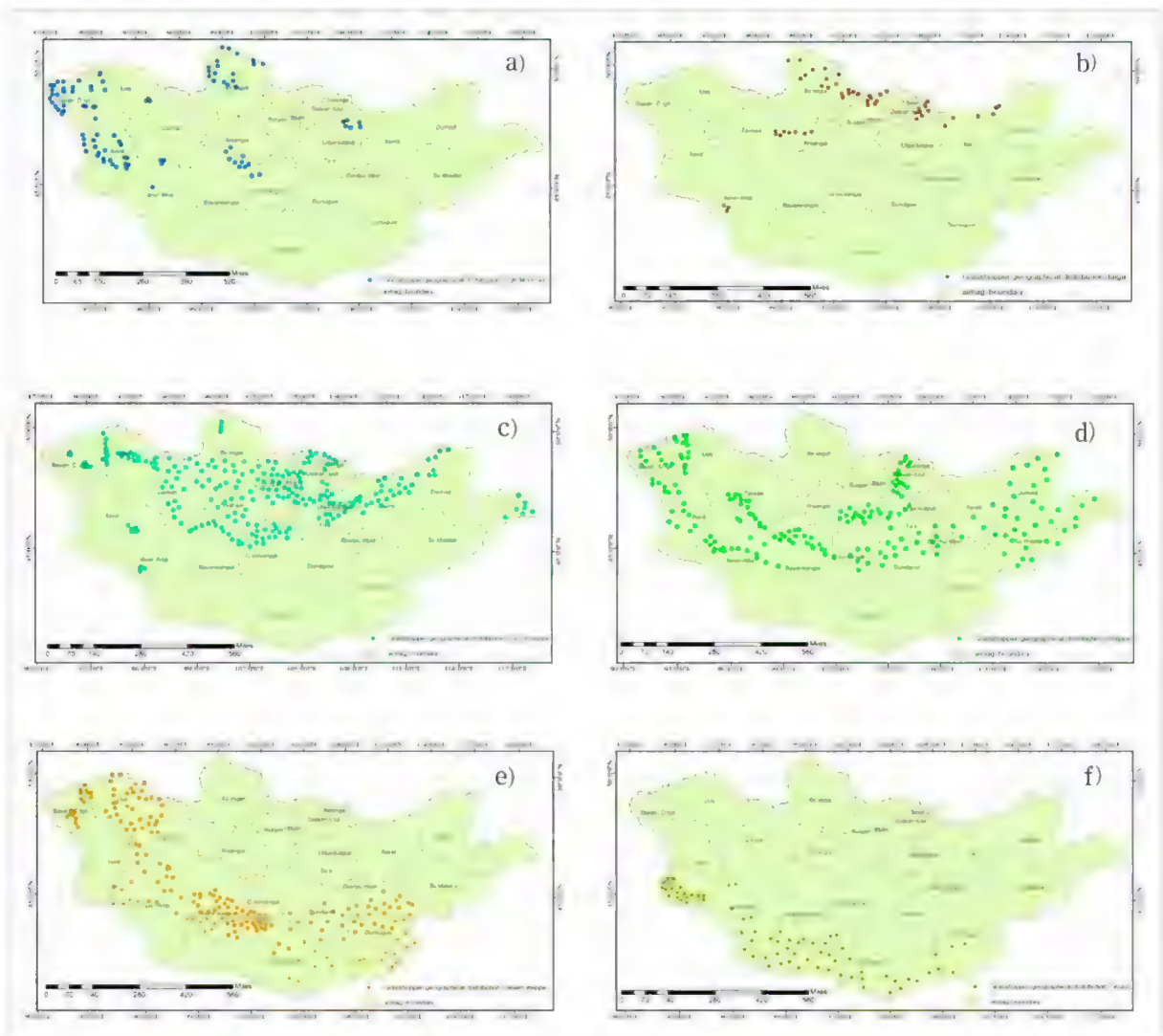


Figure 3. [doi](#)  
Distribution of grasshoppers in Mongolian natural zones in the High mountain natural zone (a); taiga natural zone (b); forest steppe natural zone (c); steppe natural zone (d); desert steppe natural zone (e); and desert natural zone (f).

Table 3.  
Similarity matrix of grasshopper distribution in neighbouring countries (China, Russia and South Korea).

Name of Country	Mongolia (%)	South Korea (%)	Russia (%)	China (%)
Mongolia	*	26.85	76.56	68.37
South Korea	*	*	36.00	36.78
Russia	*	*	*	65.31
China	*	*	*	*

Discussion

The grasshopper fauna of Mongolia comprises 128 species, including three families, eight subfamilies, 19 tribes and 52 genera, of which 34 species are registered on the European Red List (Table 2). The 17 grasshopper species that are considered endemic to Mongolia are distributed in desert and desert steppe. Notably, some species are widely distributed in



neighbouring countries, such as Russia, China and South Korea. The taxonomic keys of the superfamily Acridoidea in Mongolia were recently updated and it was reported that the superfamily includes three families, 49 genera and 127 species (Batkhuuag and Batnaran 2021). A difference of six species was observed between our checklist and the list updated by Batkhuyag and Batnaran (2021). These species included *Gomphocerus licenti* Chang, *Chorthippus* (Ch.) *karelini* Uv., *Stenobothrus kirgizorum* Ikonn., *Sphingonotus halocnemi* Uv., *Sphingonotus turcmenus* B.-Bien. and *Eclipophleps confinis levis* Mistsh. In addition, the records of specimens of four species were uncertain; these included *Chorthippus* (G.) *buyanticus* Batkhuyag et al., *Chorthippus* (G.) *tseelicus* Batkhuyag et al., *Sphingonotus halocnemi* Uv. and *Sphingonotus turcmenus* B.-Bien. In the present study, four species with uncertain distribution sources, namely *Gomphocerus licenti* Chang, *Chorthippus* (Ch.) *karelini* Uv., *Stenobothrus kirgizorum* Ikonn. and *Eclipophleps levis* Mistsh, were excluded from our checklist. In the future, the species list should be updated after previously unreported species have been identified and reported by undertaking additional research.

We compared the findings of our checklist with those of Batkhuyag and Batnaran (2021) and we found discrepancies related to three genera, namely *Aiolopus* Fieber, 1853, *Pseudochorthippus* Defaut, 2012 and *Megaulacobothrus* Caudell, 1921, as well as three species, which includes *Aeropedellus baliolus* Mistsh., *Bryodema kozlovi* B.-Bien., and *Aiolopus thalassinus* (Fabr.). These genus species are widely distributed in forests and steppe in Mongolia. When creating an annotated checklist, the species that were identified from literature were divided into natural zones, based on their distribution. However, Mongolia has the world's largest intact grassland with respect to its biodiversity (Batsaikhan et al. 2014, Herbert et al. 2019), which has great importance for the preservation of native vascular plants (Baasanmunkh et al. 2022). Thus, it is important to study grasshopper's habitat and development, which negatively impact grassland. At the same time, there is an enormous shortage of taxonomists who can identify and describe species (Wheeler 2004). The loss of diversity coupled with the taxonomic impediment is one of the most challenging issues we biologists face today (Song 2010). A poor understanding of grasshopper fauna has impaired our understanding of grasshopper speciation and evolution. Therefore, further in-depth surveys of grasshoppers in Mongolia should be conducted and it is expected that the taxonomic uncertainty checked in this study can be solved through future studies.

Notably, some species are widely distributed in neighbouring countries, such as Russia, China and South Korea. The taxonomic keys of the superfamily Acridoidea in Mongolia were recently updated and it was reported that the superfamily includes three families, 49 genera and 127 species (Batkhuuag and Batnaran 2021). A difference of six species was observed between our checklist and the list updated by Batkhuyag and Batnaran (2021). These species included *Gomphocerus licenti* Chang, *Chorthippus* (Ch.) *karelini* Uv., *Stenobothrus kirgizorum* Ikonn., *Sphingonotus halocnemi* Uv., *Sphingonotus turcmenus* B.-Bien. and *Eclipophleps levis* Mistsh. In addition, the records of specimens of four species were uncertain; these included *Chorthippus* (G.) *buyanticus* Batkhuyag et al., *Chorthippus* (G.) *tseelicus* Batkhuyag et al., *Sphingonotus halocnemi* Uv. and *Sphingonotus turcmenus* B.-Bien. In the present study, four species had uncertain distribution sources, namely



*Gomphocerus licenti* Chang, *Chorthippus* (Ch.) *karelini* Uv., *Stenobothrus kirgizorum* Ikonn. and *Eclipophleps levis* Mistsh and were excluded from our checklist. We are aware that this list is only a basis for further research and we hope that it will be further modified by the work of future scientists who devote their time and passion to researching new and interesting facts about Mongolian grasshoppers.

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## Author contributions

U.W.H conceived the study and Altanchimeg, D is the first author who analysed the data and helped to upgrade the tables on the manuscripts. All authors reviewed the manuscripts.

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## Supplementary materials

### Suppl. material 1: Species list of grasshoppers' geographical natural distribution in six types of zones [doi](#)

Authors: Altanchimeg

Data type: table

**Brief description:** Captions: (\*) = Endemic of Mongolia, (+) = geographical distribution natural zone, (★) = Indicator species of geographical natural zones, (-) = poor species. Abbreviation: 1-High mountain, 2-Taiga, 3-Forest steppe, 4-Steppe, 5-Desert steppe, 6-Desert natural zone.

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### Suppl. material 2: Species registered in the European Red List of grasshopper [doi](#)

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### Suppl. material 3: Shannon and Berger Parker's index of natural zone [doi](#)

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### Suppl. material 4: Shannon and Berger-Parker index of neighbouring boundary countries grasshopper distribution [doi](#)

Authors: Enkhtsetseg

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